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**United States Department of the Interior
Bureau of Land Management**

**Winnemucca District
Winnemucca, Nevada**

October 1997

**Final
Environmental Impact Statement
Florida Canyon Mine
Mine Expansion and Comprehensive
Reclamation Plan**



COOPERATING AGENCIES:

**Nevada Department of Conservation and Natural Resources,
Division of Wildlife
U.S. Army Corps of Engineers**

BLM MISSION STATEMENT

The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times.

Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific, and cultural values.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Winnemucca Field Office
5100 East Winnemucca Boulevard
Winnemucca, Nevada 89445
702-623-1500

In Reply Refer To:
1793/3809
(NV-020)

8 October 1997

Dear Reader:

Enclosed is the Final Environmental Impact Statement (FEIS) for the Mine Expansion and Comprehensive Reclamation Plan proposed by Florida Canyon Mining Inc., prepared by the Bureau of Land Management, Winnemucca Field Office.

This FEIS is based on an amendment to the mine's Plan of Operations submitted to the Bureau under 43 CFR 3809, and analyzes the direct, indirect and cumulative impacts associated with the continued mining and expansion of the open pit, new or relocated ore processing facilities, overburden disposal areas, exploration for extensions of the ore body, and ancillary facilities.

The FEIS has been prepared in an abbreviated format and must be used in conjunction with the Draft Environmental Impact Statement (DEIS), issued 20 June 1997. Changes are summarized in a table and presented in their context in Chapter 3 and Appendix B. The FEIS and the DEIS constitute the complete EIS. The FEIS responds to comments received during the public review period on the DEIS.

Following a 30-day availability period for this FEIS a Record of Decision and Mining Plan Approval will be issued. You may direct comments or questions to Ken Loda, Project NEPA Manager, at the above address or phone number.

Sincerely yours,

Ron Wenker
District Manager

**FINAL
ENVIRONMENTAL IMPACT STATEMENT
FLORIDA CANYON MINE EXPANSION PROJECT**

Lead Agency:

U.S. Department of the Interior
Bureau of Land Management
Winnemucca District Office

Project Location:

Pershing County, Nevada

**Comments on this EIS
Should be Directed to:**

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**Date Draft EIS Made Available to
the EPA and the Public:**

June 20, 1997

**Date Final EIS Made Available to
the EPA and the Public:**

October 10, 1997

ABSTRACT

Florida Canyon Mining, Inc. (FCMI) proposes to construct new facilities and expand existing gold mining operations within the Imlay Mining District in Pershing County, Nevada. The mine is located on public and private lands adjacent to Interstate Highway 80 approximately 35 miles northeast of Lovelock and approximately 38 miles southwest of Winnemucca, Nevada. Approximately 860 acres would be disturbed by the proposed mine expansion, of which 447 and 413 acres are public and private lands, respectively. The proposed project would include expansion of the open pit and north and south waste rock dumps, as well as the development of the new south heap leach pad; haul road; solution ponds; solution corridor/road; plant; monitoring wells/road; crusher site; sediment ponds; growth media stockpiles; exploration drill sites and roads; diversion channels; water supply pipelines; and realignment of the Johnson Canyon access road. The anticipated mine life under the Proposed Action would be 5 years.

This Final Environmental Impact Statement provides responses to comments received by BLM during the public comment period on the Draft Environmental Impact Statement (Draft EIS). The Draft EIS analyzed the environmental effects of the Florida Canyon Mine Expansion Project, plus the North Extension of the Heap Leach Pad Alternative and the No Action Alternative.

Responsible Official for EIS:



Ron Wenker
District Manager
Winnemucca District

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1.0 SUMMARY

Florida Canyon Mining, Inc. (FCMI) proposes to construct new facilities and expand existing gold mining operations within the Inlay Mining District in Pershing County, Nevada. The mine is located on public and private lands adjacent to Interstate Highway 80 approximately 35 miles northeast of Lovelock and approximately 38 miles southwest of Winnemucca, Nevada. FCMI has been operating the Florida Canyon Mine since 1986. Historical mining in the proposed project vicinity dates back to the 1860s.

A Plan of Operations for the Florida Canyon Mine was submitted to the Bureau of Land Management (BLM) in October 1985 and was approved in February 1986. Construction began in February 1986 with mining beginning in August 1986. Activities within the Florida Canyon Mine operations area have expanded periodically since production began in 1986. To date, approximately 1,259 acres have been disturbed.

1.1 PURPOSE AND NEED

FCMI proposes to expand mining operations at the Florida Canyon Mine for the purpose of extracting economically recoverable gold reserves known to exist adjacent to existing pit areas in an environmentally compatible manner. FCMI has identified the following economically driven project objectives:

- Develop gold mining facilities in the FCMI Project area;
- Extract economically recoverable gold which exists in the project area;
- Operate and reclaim the project area in an efficient, environmentally conscientious, and safe manner; and

- Meet or exceed Federal, state, and local regulations for the protection of human health and safety and the environment.

The project need is reflected by the demand for gold identified in national and global markets.

The BLM has the responsibility and authority to manage the surface and subsurface resources on public lands within its charge. FCMI's use of public land in the Winnemucca District requires conformance with BLM's surface management regulations (43 Code of Federal Regulations [CFR], Subpart 3809), as well as various statutes, including the Federal Land Policy and Management Act of 1976 (FLPMA), as amended.

The BLM determined that an environmental impact statement (EIS) would be required for the project, and a Notice of Intent (NOI) to prepare the EIS was published in the Federal Register on December 13, 1996.

This EIS is prepared in compliance with the National Environmental Policy Act (NEPA), and in accordance with BLM Handbook H-1790-1 and Nevada State Office Instruction Memorandum NV-90-435 on analysis of cumulative impacts.

This EIS considers the quality of the human environment based on the physical impacts to public and private lands that may result from mining activities at the Florida Canyon Mine. The proposed mining activities located on public lands are subject to review and approval by the BLM pursuant to the FLPMA and subsequent surface management regulations (43 CFR 3809).

1.2 PROPOSED ACTION

The proposed Florida Canyon Mine Expansion Project (FCMI Project) would include mine development and surface disturbance on approximately 413 acres of private land and 447 acres of BLM-administered public land, for a

total of 860 acres of new surface disturbance associated with the Proposed Action.

Current mine facilities consist of a series of connected pits, waste rock dump areas, a heap leach pad and associated processing plant, access and haul roads, and ancillary facilities (see Map 2-2 in the Draft EIS). The proposed project would include expansion of the open pit and north and south waste rock dumps, as well as the development of the new south leach pad; haul road; solution ponds; solution corridor/road; plant; monitoring wells/road; crusher site; sediment ponds; growth media stockpiles; exploration drill sites and roads; diversion channels; water supply pipelines; and realignment of the Johnson Canyon access road. The anticipated mine life under the Proposed Action would be 5 years.

The proposed project would provide for a construction phase of approximately 12 months, scheduled to begin in November 1997. Operations would continue for 5 years, through 2002. Reclamation would continue until 2010, with monitoring continuing for several years following reclamation. No increases in operations personnel are anticipated. An average construction work force of 43 would be employed over the 12-month construction phase, with a peak of 104 workers employed for a 2-month period approximately half way through the construction phase.

1.3 ALTERNATIVES

The EIS analyzes the direct, indirect, cumulative, and residual environmental impacts of the Proposed Action, the North Extension of the Heap Leach Pad Alternative, and the No Action Alternative. The alternatives are described in the following sections.

1.3.1 North Extension of the Heap Leach Pad Alternative

The North Extension of the Heap Leach Pad Alternative would expand the existing heap leach pad to the north rather than construct a new heap leach pad to the south, and would result in approximately 717 acres of total project surface disturbance (see Map 2-4 in the Draft EIS). The heap leach pad extension would disturb approximately 156 acres. The existing North and South Waste Rock Dumps would be expanded by approximately 92 and 248 acres, respectively.

1.3.2 No Action Alternative

Under the No Action Alternative, currently permitted operations (Amendment No. 8) at the Florida Canyon Mine would cease after 1997. Disturbed areas of mining facilities would be reclaimed under the existing permits for those activities. Mineral resources in this area would remain undeveloped, and no expansion or construction of the mine pit, waste rock dumps, heap leach pads, or other ancillary facilities would occur.

1.4 IMPORTANT ISSUES AND IMPACT CONCLUSIONS

A small number of issues were raised during scoping for this EIS. Additional issues were identified by resource specialists during the preparation of the EIS. These issues along with their impact conclusions are presented below. Impact conclusions include the implementation of mitigation measures that have been identified. These measures are presented in detail in Chapter 4.0 of this Final EIS for each affected resource.

Geology and Minerals

Issue: Construction in an area where the facility could potentially be affected by, or induce, geologic hazards.

Conclusion: The activities at the proposed site are not expected to generate any geologic hazards, nor should the proposed facility be affected by such hazards. Although the region has a history of seismic activity, the project site has been seismically inactive for recorded history based on records available at the National Earthquake Center, located in Golden, Colorado.

Issue: Interference with the present or future development of other known mineral resources.

Conclusion: Condemnation drilling has been completed in order to minimize the possibility of covering any future economic ore deposits. The only known potential geologic or mineral resource to be affected is the covering of the alluvium, which is economically insignificant.

Water Resources and Geochemistry

Issue: Degradation of surface water quality based on Nevada or Environmental Protection Agency water quality standards for appropriate or designated beneficial uses.

Conclusion: Perennial streams and springs do not exist within the project area, so no impacts to perennial streams or springs are expected. Ephemeral drainages exist within the project area and carry water only during seasonal snowmelt or heavy precipitation events.

Issue: Degradation of groundwater quality based on Nevada drinking water standards.

Conclusion: Geochemical testing indicates that waste rock from the mine does not have a potential to generate acid seepage. Column tests indicate that water in contact with backfill material would be of similar quality to existing groundwater.

Issue: Reduction of static water levels (5 feet or greater) in existing wells because of pit dewatering.

Conclusion: A groundwater model was run to predict the drawdown at the end of mining and the maximum horizontal extent of drawdown as defined by the 5-foot drawdown contour. The results indicate that drawdown effects would not extend beyond the proposed permit boundaries to the north and west and would not impact wells located northwest of the project area.

Issue: Measurable reduction in flow of perennial streams or springs.

Conclusion: No perennial streams exist within the project area, so no impacts would occur to perennial streams. No seeps or springs occur within the project area. The nearest spring occurs approximately 1 mile east of the project area in Florida Canyon. A second spring is located northeast of the project area in Humboldt Canyon. Both springs are elevated above projected groundwater levels (i.e., perched) and would not be impacted by drawdown from dewatering operations. Groundwater modeling of recharge to Rye Patch Reservoir on the Humboldt River indicates that the mine dewatering operation would reduce recharge to the Humboldt River by less than 0.02 percent.

Issue: Formation of a pit lake as a result of mine development and impacts to wildlife from degraded water quality.

Conclusion: The pit would be partially backfilled to a level above the pre-mining groundwater elevations in the pit area. Therefore, a pit lake is not expected to form.

Air Quality

Issue: Mining operations would potentially degrade air quality in the vicinity of the mine below applicable air quality standards.

Conclusion: Modeling and on-site monitoring results indicate that maximum concentrations of particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), nitrogen dioxide, carbon monoxide, and sulfur dioxide would not exceed Nevada or National Ambient Air Quality Standards. FCMi plans to follow common construction practices to minimize fugitive dust emissions and impacts to air quality. During mining operations, dust (PM_{10}) levels in the vicinity of the mine would be about the same as existing levels. The project would comply with all existing air quality standards in Nevada.

Soils

Issue: Loss of suitable soils or other growth media during salvage, stockpiling, or reclamation activities.

Conclusion: A total of 1.5 million yards of growth media would be salvaged and stockpiled and would be available for reclamation of disturbed land after mine closure. Stockpiles would be seeded with a cover crop and perennial species to prevent erosion and establishment of weedy species.

Issue: Erosion of disturbed or reclaimed sites thereby filling natural drainages.

Conclusion: Previous experience indicates that successful revegetation is likely to occur approximately 3 years after reseeding. At that time, plant cover would be sufficient to substantially decrease soil erosion.

Vegetation Resources

Issue: Revegetation of proposed disturbance areas comparable to pre-mining conditions.

Conclusion: The majority of the project area would be revegetated with native species if possible. Exotic species would be used if suitable native species are not available; natural biological diversity of the area would not be diminished; exotic and naturalized species can be confined within the project area; analysis of the ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural community; and management objectives cannot be met with natives.

Wildlife and Fisheries Resources

Issue: Wildlife habitat disturbed or lost.

Conclusion: No riparian habitat would be affected. Loss of upland habitat would not exceed 860 acres of native vegetation. The value of habitat lost would be low to

moderate, due to the proximity of the project to past and present disturbances and activities.

Issue: Loss of mule deer winter range.

Conclusion: A total of 860 acres of mule deer winter range would be removed for the life of the project.

Issue: Direct mortalities, habitat fragmentation, and animal displacement.

Conclusion: Direct mortalities would be limited. Habitats would be further fragmented and terrestrial wildlife would be displaced for the life of the project.

Issue: Impacts to resident and migratory birds.

Conclusion: Although the likelihood of disturbance is low, potential effects to breeding birds (e.g., passerines, raptors) could occur from direct habitat removal, disturbance to nest sites, and increased noise and human presence, particularly from mine exploration activities. Effects to upland game birds would be minor. The powerline electrocution hazards would be mitigated by structure design, and line strikes are expected to be minimal.

Issue: Potential impacts to bat hibernacula and day roost sites.

Conclusion: Mine exploration activities may directly or indirectly impact bat hibernacula and day roost sites within the historic Piedmont Mining Complex.

Issue: Acute or chronic toxic effects to resident and migratory wildlife.

Conclusion: Potential impacts from cyanide ingestion would be low, due to committed protection measures. Due to pit backfilling, no long-term water quality issues associated with a future pit lake would occur, relative to wildlife ingestion.

Issue: Impacts to wildlife from transporting hazardous chemicals to the mine.

Conclusion: No incremental increase in the shipment or use of hazardous materials would occur; therefore, no additional risk to aquatic or terrestrial resources located along the transportation route have been identified for the Proposed Action.

Issue: Impacts to area fisheries from dewatering activities.

Conclusion: No surface water resources or aquatic organisms would be impacted.

Special Status Species

Issue: Loss of or disturbance to roosting bat concentrations (e.g., hibernacula).

Conclusion: Direct or indirect impacts to roosting bats may occur from mine exploration activities. Noise and vibrations from drilling could indirectly disturb roosting bats, interrupt critical air flow for hibernacula, or affect shaft integrity, possibly resulting in roost abandonment or mortalities. Both hibernacula and day roost sites for sensitive bat species could be adversely affected, resulting in adverse impacts to the local populations.

Issue: Impacts to nesting ferruginous hawks.

Conclusion: Proposed mine expansion, particularly exploration activities, may adversely impact breeding ferruginous hawks, if present.

Issue: Impacts to nesting burrowing owls.

Conclusion: A total of approximately 860 acres of potential habitat for the burrowing owl would be removed for the life of the project.

Range Resources

Issue: Loss of forage or grazing area leading to a permanent reduction of allowable animal unit months for the permittees within the affected allotment.

Conclusion: Mine expansion, operation, and reclamation would result in the permanent loss of 1 animal unit months or approximately 1 percent of the active grazing preference.

Land Use and Access

Issue: Potential realignment of the communication tower access road.

Conclusion: This road would not be realigned under the Proposed Action.

Aesthetics (Visual and Noise Resources)

Issue: Visual contrasts with elements of the characteristic landscape in exceedence of BLM Visual Resource Management (VRM) objectives.

Conclusion: The Proposed Action and the North Extension of the Heap Leach Pad Alternative would result in moderate contrasts with existing forms, lines, and textures of the characteristic environment as a result of the construction of the new heap leach facility and expansion of the waste rock

dumps. These contrasts would exceed VRM objectives during the life of mining. If proposed reclamation efforts were successful, visual contrasts would be reduced to acceptable levels within 10 years of the reclamation period.

Cultural Resources, Ethnography, and Paleontology

Issue: Direct physical disturbance of cultural resources or traditional use sites that are listed on or are eligible to the National Register of Historic Places or are protected under state or other Federal statutes.

Conclusion: The entire project area has been inventoried, and no NRHP-eligible sites have been identified. Environmental protection measures involving cooperation between FCM, the BLM, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation would be implemented if cultural resources are discovered or affected during construction or operation activities. Based on the protection measures, proper steps would be taken to evaluate the quality of the resource, to determine whether the loss is acceptable, and to mitigate losses that are not acceptable. In some cases, construction activities could lead to the

permanent loss of cultural resources.

Issue: Indirect impacts (e.g., casual collecting) from development.

Conclusion: Indirect impacts would be controlled by limiting employee access to known archaeological sites, marking project area boundaries, educating employees about the significance of cultural resources, implementing erosion protection measures on exploration and access roads and drill pads, and implementing a strict management policy restricting the casual collection of artifacts from the project area.

Issue: Impacts to significant paleontological resources.

Conclusion: Although paleontological resources have been identified in geologic formations that occur in the vicinity of the project area, no deposits have been located in the project area to date. Mitigation measures designed to reduce impacts to previously unidentified paleontological resources that may be located during the Proposed Action would be implemented if paleontological deposits are identified during project construction and operation.

Hazardous Materials

Issue: Impacts of a sodium cyanide release on sensitive resources.

Conclusion: A release of sodium cyanide would most likely occur during transport to the site. The likelihood of a sodium cyanide release during transport is estimated to be less than 0.02 releases over the life of the project. All hazardous material carriers comply with Federal and state hazardous materials transportation regulations. The potential also exists for impacts to sensitive receptors resulting from a release of sodium cyanide at the mine site; however, potential impacts have been minimized by the construction of a series of diversion and containment structures. FCM1 maintains an Emergency Response Plan to minimize impacts to sensitive resources from a sodium cyanide release.

Issue: Impacts of mining on human health.

Conclusion: None of the process chemicals or fuels utilized in large quantities are carcinogenic. Emergency response and spill response plans mitigate any spills or releases of hazardous chemicals immediately. The primary possibility of endangerment of human health is due to a release during transport. The number of transportation-related releases

over the life of the project has been estimated at about 0.05. However, the probability of such a release affecting human health would be even less.

1.5 AGENCY-PREFERRED ALTERNATIVE

In accordance with the National Environmental Policy Act, Federal agencies are required by the Council on Environmental Quality (40 CFR 1502.14) to identify their preferred alternative for a project in the Draft EIS, if a preference has been identified, and in the Final EIS prepared for the project. The preferred alternative is not a final agency decision; it is rather an indication of the agency's preliminary preference. The alternative identified below is the BLM's preferred alternative at the Final EIS stage in the environmental review process. This preference may be changed based on any agency and public comments that may be received on this Final EIS. The BLM's preference at this time considers all information that has been received and reviewed relevant to the proposed project.

The agency preferred alternative is the Proposed Action, with the identified mitigating measures. Even though the North Extension of the Heap Leach Pad Alternative looks very comparable to the Proposed Action, several facts argue for preference of the Proposed Action. They are:

- The Humboldt Canyon drainage and associated groundwater are sensitive resources, both environmentally and socially. The stream and associated riparian area provide locally important wildlife habitat. The stream and groundwater are used as domestic potable water sources for the residents in the

vicinity of Humboldt House and the existing mine facility. While there is no reason to expect a failure of the heap-leach facility, it is prudent to avoid placing that facility near this significant drainage and groundwater area when another site is available.

- The heap configuration of the Proposed Action provides for less slope area and shorter slope lengths, factors which are likely to make reclamation more effective on that facility. The lower heap height of the Proposed Action provides for more efficient rinsing, lowering long-term water consumption. More effective rinsing makes it even less likely that a water quality or chemical issue might arise after the authorized reclamation and closure.
- The additional acreage disturbed by the Proposed Action is a temporary loss of habitat, which would be regained upon completion of the site reclamation.
- Development to the north, especially in the vicinity of the alternative heap leach pad, is limited by the presence of cultural resources. Should the need arise for even a minor modification of the alternative requiring additional area, those cultural resources would require time-consuming and potentially expensive mitigation.
- Implementation of the Proposed Action would allow for more efficient mine operations as opposed to the alternative, thus resulting in beneficial economic and environmental effects. Benefits would include reduced time needed for heap leach pad rinsing, shorter hauling distances, reduced vehicle emissions during the life of the mine, and more effective concurrent closure and reclamation.

2.0 CONSULTATION AND COORDINATION

2.1 DRAFT EIS REVIEW

In the course of preparation of the Draft and Final EISs for the FCMI Project, the BLM has communicated with and received input from many federal, state, and local agencies; elected representatives; environmental and citizens groups; industries; and individuals. Approximately 350 copies of the Draft EIS were distributed by mail to various individuals, organizations, and government agencies. During the 60-day public comment period, some of those who received copies of the Draft EIS have submitted written comments and/or presented verbal comments at the public meetings. Those comments are presented and responded to in the following sections.

A listing of the agencies, organizations, and individuals who received copies of the Draft EIS in June 1997 is presented in Appendix A.

2.2 PUBLIC MEETING COMMENTS AND RESPONSES

2.2.1 Lovelock, Nevada - July 15, 1997

This public meeting, held in the Pershing County Community Center, had 13 attendees. One person presented statements. The key points made are presented below.

Tom Myers, Hydrologist for Great Basin Mine Watch, Reno, Nevada (Responses to the following comments, presented at the public meeting, are provided in the responses to Comment Letter #1 of this chapter.)

- Concerned about water quality; the pit backfill may have different hydrologic characteristics than were modeled.
- Air may be able to enter backfill and facilitate negative reactions.
- Column leach tests may not represent pit conditions and do not eliminate need for long term water quality monitoring.
- Wells should be added to backfill to verify model predictions for water quality.
- This project should not have an effect on the Humboldt River due to the backfilling, which will decrease the hydrologic deficit created from mine operations.
- Impacts on recharge to the Humboldt River during mine operations from dewatering drawdown and consumptive use at the mine would be minimal.
- Would appreciate more information about the groundwater model in the EIS so the public can understand it and the hydrologists can better evaluate its accuracy.
- Were hydrologic parameters of backfill considered such as recharge rates and rapid gradient slopes around wells? The MODFLOW model does not handle these steep slopes very well. More figures and scatter plots in the EIS would be helpful.
- The rerouting of the Florida Canyon channel over the backfilled material may cause infiltration into the pit where reactivity may occur. This could move low quality water toward the Humboldt River. Does the design handle reducing this infiltration?

- Concerned with neotropical birds and the implementation of construction during the breeding season. Nest densities are high in the pinon-juniper woodland and surveys should be conducted before vegetation clearing activities. What are the survey methodologies and how is breeding activity confirmed?
- The loss of mule deer habitat is discussed but the fragmentation of movement corridors may be a more important issue. This should be discussed and included in the Issues/conclusions section of the EIS.
- Personal communications should not be used as references in the EIS.
- Pleased with plans to backfill the pit and the decrease in impacts this will facilitate.

2.2.2 Winnemucca, Nevada - July 16, 1997

This public meeting, held at the BLM Winnemucca Field Office, had 23 attendees. One person presented statements. The key point made is presented below.

Adrienne Parsons, Humboldt House resident

- When will BLM decide which alternative will be selected and on what basis will they make this decision?

BLM will issue the Record of Decision in November 1997. The BLM's rationale for selecting the Agency-Preferred Alternative is discussed in Section 1.5 of this Final EIS.

2.3 WRITTEN COMMENTS AND RESPONSES

The BLM received 14 letters addressing the Draft EIS during the 60-day public comment period. All letters were reviewed and the substantive comments (those addressing the accuracy or completeness of the Draft EIS) contained in each letter were identified. Responses have been prepared for the substantive comments identified; these responses are presented in this section. Other comments have been reviewed and considered by the BLM in determining the agency-preferred alternative for the proposed project.

Table 2-1 lists each of the comment letters by author and reference number assigned to the letter. All letters have been reproduced in their entirety, and all material has been reviewed and considered.

Following Table 2-1, the comment letters and responses are presented. Each substantive comment is identified by a bracket and reference number keyed to the letter reference number. Thus, Comment 4-3 refers to the third comment in Letter 4. The response to each comment accompanies the letter and is identified by the reference number of the respective comment (e.g., Response to Comment 4-3).

The reader is reminded that this being an abbreviated Final EIS, it is necessary to use the Draft EIS in conjunction with the Final EIS in order to fully understand the analysis that was conducted for the proposed FCMI Project and certain responses in the Final EIS.

Table 2-1
Comment Letters

Letter No.

- | | |
|----|---|
| 1 | Dr. Tom Myers, Great Basin Mine Watch |
| 2 | Glenn Lewis |
| 3 | Chester C. Buchanan, United States Department of the Interior, Fish and Wildlife Service, Nevada State Office |
| 4 | Richard T. Heap, Jr., State of Nevada Department of Conservation and Natural Resources, Division of Wildlife |
| 5 | James F. Devine, United States Department of the Interior, U.S. Geological Survey |
| 6 | David J. Farrel, United States Environmental Protection Agency, Region IX |
| 7 | Julie Butler, State of Nevada Department of Administration |
| 8 | Thomas J. Fronapfel, P.E., State of Nevada Department of Transportation |
| 9 | James D. Morefield, Nevada State Clearinghouse, Natural Heritage |
| 10 | Tim Wilson, State of Nevada Department of Conservation and Natural Resources, Division of Water Resources |
| 11 | Bill Durbin, State of Nevada Department of Business and Industry, Division of Minerals |
| 12 | John Williams, Northern Nevada Building Trades Council |
| 13 | Dr. Tom Myers, Northern Nevada Building Trades Council |
| 14 | Wendy A. Kuntz, Northern Nevada Building Trades Council |

Letter 1



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Glenn Miller, Chair
Sierra Club
Toiyabe Chapter, 1-1

Virginia Sanchez
Ciniseo Alejo Native
American Program

William Anell
Independent Prospector



Jack Orr
Western Shoshone
Resources Inc.

August 4, 1997

Ken Loda
Project NEPA Manager
Bureau of Land Management
Winnemucca Field Office
5100 E. Winnemucca Boulevard
Winnemucca, NV 89445

Re: Draft Environmental Impact Statement: Florida Canyon Mine Expansion

Dear Mr. Loda:

Thank you for this opportunity to comment of the DEIS. First, I want to thank the BLM and Pegasus for coming up with a plan to partially backfill the pit. This will decrease potential impacts to water quantity and quality. I would like to encourage the BLM to require this action at many more mines.

There are still water quality concerns, however. The pit backfill may have substantially different hydraulic characteristics and air may still be available at certain points to facilitate reactions. Column leach tests do not perfectly represent pit conditions. Conclusions based on column tests should not be taken as the last word; they do not eliminate the need for long-term monitoring of water quality or for mitigation bonds.

Backfilling also decreases the hydrologic deficit that this project would have caused. I identified in my 1994 report to the Sierra Club that Florida Canyon would have minimal impact on the Humboldt River unless it went much deeper; this project does not reach that threshold. Impacts during mine operations are due to the dewatering drawdown cone reducing the gradient for flow to the river. They are also due to the consumptive use of pumpage for mine operations reducing this flow. Based on the groundwater model output in the EIS, it does not appear that the capture zone is very wide. I agree that the amount of captured water and the impact on the Humboldt will be small.

Had you not backfilled, there would have been a deficit created and the pit would have drawn water in for a long time and created a small, but measurable differences during baseflow, especially at a time when the Humboldt River may exhibit decreased flows due to pit filling further upstream. Also, there would have been a perpetual evaporative loss from a pit lake which would have decreased the

Response to Letter 1

1-1 The pit backfill material was anticipated to have different hydraulic properties than the surrounding bedrock by utilizing different input parameters to characterize the backfill within the groundwater model. It is likely that the backfill material will have a higher hydraulic conductivity than pre-mining bedrock and alluvium, but this increase would have little effect on the dewatering impact away from the pit. For additional discussion regarding pit backfill water quality, please refer to Response to Comment 1-6. While air may infiltrate the backfill because of an increase in permeability and porosity, geochemical data indicate that the backfill material would not generate acid or release metals through oxidation reactions. Column tests are the best means of predicting the future geochemical behavior of waste rock subjected to infiltration through pit backfill or a waste rock dump. FCMI would be required to conduct monitoring by the BLM during mining and after closure of the mine to ensure long-term protection of the environment.

1-2 Comment noted.

1-3 A complete report of groundwater modeling for the Proposed Action is provided in the following report which is on file at the BLM District Offices in Winnemucca, Nevada and available for your review:

Broadbent and Associates, Inc. (BAI) 1997. Hydrogeologic study and ground-water flow model for Florida Canyon Mining, Inc., Environmental Impact Statement. Report submitted to Florida Canyon Mining, Inc., Inlay, Nevada. May 1997.

However, in response to your specific comments and suggestions the following summary is provided.

Numerical modeling of pit inflows and extent of drawdown impacts to groundwater levels was conducted using the groundwater model MODFLOW8, a finite difference flow model developed by the U.S. Geological Survey (McDonald and Harbaugh 1988). The model was modified by BAI to provide input and output functions and was subsequently tested using a published U.S. Environmental Protection Agency problem set designed for MODFLOW to confirm its computational accuracy. The model covered an area of approximately 165 square miles extending from the Humboldt Range crest to the east (a recharge boundary), the Humboldt River and Rye Patch Reservoir to the north and west (drain boundaries), and a no-flow boundary to the south at the approximate latitude of Rye Patch Dam.

A single layer model was used to simulate groundwater flow from the bedrock aquifer in the Humboldt Range westward into the upper alluvial aquifer. This model domain was selected based upon the observation that dewatering impacts would only extend to the depth of the upper aquifer. The model consisted of a single layer with 104 cells by 102 cells for a total of 10,608. Most of the model cells are clustered in an area approximately 3.5 miles square centered over the mine operations.

Letter 1 Continued

groundwater flow to the river. This was estimated as 1800 af/year by the modelers herein and 1000 af/year by Eakin¹.

1-3 Information about the groundwater model in the DEIS is very sparse and should be improved. The DEIS provides great details about the geology and tables of water quality constituents. Neither of these will be understood by the general public. But I have heard the excuse that modeling details are beyond the ability of the public to understand. I believe a few additional pages would not burden the public and it would provide hydrologists enough information to evaluate without immediately having to FOIA copies of the technical supporting documents. Some suggestions for improvement include discussion of MODFLOW cell sizes and layers, boundary conditions (including discussion of the connection with the river), hydraulic parameters (including discussion of the conductivity of the backfill), transient step sizes, and recharge rates (and their derivation). For example, I am concerned about the rapid slopes and seepage faces and how that is handled in MODFLOW. Did the consultants develop a new routine? If so, I did not see it mentioned in the EIS. I would recommend a series of figures showing conductivities and boundary conditions for each layer in the model. A scatter plot showing calibration and observed water levels and verification and observed levels would help us assess the accuracy of the model and estimate. A sensitivity analysis should be run so that we know how firm the dewatering estimate is. I would prefer a hydrologist's estimate including the range of expected dewatering pumpage rather than an engineer's estimate of a single firm yield number.

1-5 I am concerned about the impacts to flow levels and amounts around the backfilled pit. Depending on compaction (which I did not see a discussion of), the hydraulic conductivity could be much higher than the surrounding rock. High conductivity backfill intercepting a bedrock aquifer could provide a sink into which the aquifer will discharge causing problems further away than imagined in this study.

1-6 Another concern is the water in ephemeral Florida Canyon flowing into the backfilled pit. The DEIS says the channel will be ripped through the backfill. It appears that most of this water will infiltrate into the pit. This causes quality problems as there will be a zone that is constantly wetting and drying. During large volume events, the water table in the backfill may rise very substantially, increasing the gradient of flow out the downstream side and decreasing the gradient into the pit. This could cause slugs of low quality water to move downstream from the pit to the river. The DEIS did not address this possibility. There is no possibility that a design could keep water from infiltrating forever, so this issue should be addressed.

1-7 There are two concerns so far with wildlife resources. First, all vegetation destroying activity should cease during the neotropical bird breeding season from March to August, or at least from May to July. There will be more than 800 acres disturbed. Ongoing studies of breeding bird

¹ Eakin, T.E., 1962. Ground-water Appraisal of the Inlay Area, Humboldt River Basin, Pershing County, Nevada, in Ground-water Resources - Reconnaissance Series Report 5, Nevada Department of Conservation and Natural Resources, 49 p.

Response to Letter 1

Five transmissivity zones were defined within the model to simulate the hydrogeologic units in the vicinity of the mine:

- 1) Relatively high transmissivity younger alluvium in the Humboldt River Valley;
- 2) Low transmissivity older alluvium near the Humboldt Range;
- 3) Low transmissivity unaltered Grass Valley Formation siltstone;
- 4) Very low transmissivity argillaceous altered siltstone; and
- 5) Moderately transmissive altered siltstone.

Transmissivities determined by pumping tests were available for several of the hydrogeologic units as discussed in Section 3.3.1.3. Groundwater, of the DEIS. Where transmissivities were not known from pumping tests, values from the literature or from evaluation of adjacent drill hole information were used (see BAI 1997 for more detail). Recharge was calculated by the MODFLOW/88 Recharge package based upon the Maxey-Eakin method wherein recharge is a function of ground surface elevation and total precipitation.

The numerical model was calibrated in steady-state mode to observed groundwater levels within 11 monitoring wells at the mine. In addition, a fifteen month transient model calibration run was conducted and compared to pit inflow rates observed during dewatering of the current pit in 1994 and 1995. The accuracy of the simulated inflow rates indicated that the calibrated model adequately reproduced observed groundwater elevations and pit inflow rates.

The calibrated model was used predict the impact of proposed pit dewatering below the level of existing pit dewatering. The area that is expected to experience an impact due to the decline of water levels from pit dewatering is defined by the 5-foot drawdown contour. Water level declines less than 5 feet were not considered in the analysis as fluctuations of less than 5 feet would likely not be distinguishable from natural seasonal variations in groundwater levels.

1-4 The meaning of the term "rapid slopes" in your comment is not clear. However, BLM surmises that your question relates to the modeling routine used to simulate pit dewatering over the life of the proposed operations. The MODFLOW/88 Drain and Block Centered Flow packages were used to estimate pit dewatering rates through time based upon the required depth of dewatering during the proposed project. Seepage faces were not included in the model. The model as implemented here uses one layer and incorporates the Dupuit assumptions that flow lines are horizontal, the horizontal hydraulic gradient is equal to the slope of the free surface, and the gradient is constant with depth. These are reasonable assumptions for the dewatering model given the available hydraulic parameter database. Incorporating seepage face flow would result in low gradients near the pit with corresponding lower flux rates that would probably result in lower flow rate predictions. Time series plots of predicted and observed water levels are shown in Appendix B of the modeling report (BAI 1997). A sensitivity analysis was performed on the 15-month calibration model run.

Letter 1 Continued

- 1-7 habitat in Nevada have identified an average greater than four nests per acre in PJ habitat and at least one per acre in sagebrush. As mitigation, the BLM should assume nesting birds exist. If the BLM insists on surveying for birds to allow their habitat to be destroyed, the EIS must be very specific about the surveying techniques. How do you define a breeding bird nest? Do you have to find a nest, which is very difficult? Or is the presence of a male and female sufficient? This is all very important to avoid the long-term cumulative impacts to migrating neotropical birds that is occurring all over the Humboldt basin.
- 1-8 Second, EISs usually just talk about the loss of mule deer habitat. What about the impact on migration corridors which potentially magnifies the impact of the project? This should be included in discussion and mentioned up front under issues and conclusions.
- 1-9 Also, biological resource survey techniques should be listed. It does not burden the public to just mention the type of survey and list the dates on which they were performed. The BLM should not rely on personal communications for references. In fact, this may violate applicable CEQ regulations.² Typically, these are observations of a biologist suggesting that he's never seen some type of species in the area. No formal survey, no indication of whether the person was actually looking for the species.
- 1-10 Finally, I have been told that there have been several cyanide spills at the existing Florida Canyon Mine. The EIS should discuss this and include the remedies that Pegasus will take to avoid future spills.
- 1-11 In conclusion, we are pleased the BLM and Pegasus agreed to backfill the pit. This will decrease the impacts. The EIS still leaves much to be desired in the detail of information provided. Thank you for considering our comments.

Sincerely,



Tom Myers, Ph.D.
Hydrologic Consultant

²See Council on Environmental Quality regulations, Sec 1502.21, Incorporation by Reference. "Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference" (Emphases added). Personal communications are not available for inspection or review.

Response to Letter 1

- 1-5 Please refer to Response to Comment 1-4. The impacts to groundwater levels in the vicinity of the backfilled pit were considered in the modeling of groundwater levels following cessation of mining shown on Map 3-14 in the Draft EIS. While some drawdown due to dewatering still remains (see Map 3-13), no significant impacts to groundwater levels and flow directions are predicted to occur. High conductivity of pit backfill would result in an area of relatively low gradient, lowering the water levels immediately upgradient from the pit and raising water levels immediately downgradient from the pit. The fully recovered steady state flow field will have the same lateral through-flow as it did prior to mining. The only effect of high conductivity fill materials will be on water levels in the immediate vicinity of the pit; there will be no effect on the lateral flow rates from the bedrock to the alluvium because this rate is controlled by the source and drain areas which occur in low conductivity bedrock and alluvium. Hence, the presence of backfilled material within the pit would not have an impact to groundwater levels and flow directions "further away than imagined in this study."
- 1-6 While some infiltration of flow would be expected during runoff events from Florida Canyon, the frequency of these events is low. The pit backfill would be composed primarily of alluvium (about 80 percent) and would not include any sulfide rocks. Hence, even if significant amounts of water infiltrate the backfill, there is not likely to be any degradation in water quality. This is due to the low acid generation potential shown through the geochemical characterization of rocks to be mined and used as backfill for the pit.
- 1-7 Based on your comment, the issue for the protection of neotropical migrants under the Migratory Bird Treaty Act has been expanded and clarified. The importance of neotropical migrants is discussed in Section 3.7.1.2 of Wildlife and Fisheries Resources in the Draft EIS (page 3-83). Please note that no piñon-juniper habitat occurs in the project area; therefore, habitat for breeding birds is limited to the sagebrush and shrubland communities, where nesting densities would be lower than in the woodland habitats referenced in your comment.

FCMI has presently committed to conducting breeding bird surveys in native habitats located within proposed disturbance areas, if vegetation removal were planned during the breeding season (April through July). This additional wildlife protection measure is summarized in Table 3-1. As stated, FCMI would coordinate with the BLM regarding survey methodology (standard breeding bird presence/absence surveys) and potential protection measures, if warranted. Confirmed breeding would be based on breeding displays and defense behavior, documented feeding, and presence of eggs or young, if a nest is found. The applicability of additional protection measures would depend on the species' potentially affected, location of a nest site, type of disturbance planned, seasonality, and current BLM protocols.

Regarding cumulative effects to birds, FCMI has developed a comprehensive reclamation plan (see Section 2.2.15, Reclamation, of the Draft EIS), which would minimize the long-term effects to nesting birds following reestablishment of herbaceous and woody vegetation. Therefore, potential displacement of breeding birds would be considered a short-term impact during the life of the project.

Letter 1 Continued

Response to Letter 1

- 1-8 The EIS examined the potential to affect movement corridors for applicable wildlife groups, such as big game. The EIS analysis addressed possible effects to mule deer movements, and the Draft EIS states that no impacts to big game migratory or movement corridors would occur from the proposed project (see page 3-85, Section 3.7.2.1 of Wildlife and Fisheries Resources in the Draft EIS). This evaluation was based on discussions with the Nevada Division of Wildlife (NDOW 1997).
- 1-9 Citations for vegetation baseline studies performed in the project area are given in Section 3.6.1.1 of Vegetation Resources (page 3-77), and for wildlife baseline studies in Section 3.7.1.2 of Wildlife and Fisheries Resources (page 3-81) in the Draft EIS. Full references for these reports, including dates of studies and survey methodologies, are listed in Chapter 6.0, References (page 6-1). These reports are available for public review at the BLM Winnemucca office.
- Regarding the use of "personal communications," the BLM is responsible for the EIS analysis and disclosure of issues relative to the proposed project. The lead agency (i.e., BLM) or its designated non-federal representative often works directly with associated Federal and state agencies in conducting analyses under NEPA. Use of personal communications as references from other sources is fully within the applicable CEQ guidelines and regulations, as are the associated observations and documentations of the BLM biologists from their respective field activities within their District.
- 1-10 Acknowledgement of a release of sodium cyanide solution, operational changes implemented, and prevention measures taken are discussed in Section 3.15, Hazardous Materials, under Storage and Use (page 3-173) of the Draft EIS. This section also addresses the hazardous *Spill Prevention, Control and Countermeasures Plan* and the *Emergency Response Plan* developed by FCMI for implementation in the event of a spill, if necessary. Also, please refer to discussions of existing spill prevention regulations and the fluid management plan developed by FCMI in Section 2.2.13.2 of Hazardous Materials and Wastes, pages 2-19 through 2-22 of the Draft EIS. Finally, please refer to Section 3.7.2.1 of Wildlife and Fisheries Resources in the Draft EIS (page 3-86), regarding the cyanide-related mortalities that have been reported by FCMI to NDOW annually, and the protection measures that FCMI has committed to as part of the proposed project.
- 1-11 Comment noted.

Letter 2

Ken Loda
Bureau of Land Management
Project Manager
Winemucca Field Office
3100 E. Winemucca Blvd.
Winemucca, Nv. 89445

Dear Ken,

I'm writing in response to Pegasus Gold Corp.'s plans to expand their mining operations at Florida Canyon, as I was unable to attend the meeting because of earlier plans. I am in favor of plans to expand their operations, as it will bring much needed growth into the area. Requirements for equipment, supplies, consumables, etc. will be a boon for the local area, and also, the U. S. in general. As you know, mining operations such as this require large trucks, drills, other large support equipment, and thousands of other items that must be supplied to keep the operation going. These requirements, while not all being made in Nv. are for the most part, made in the U. S. and I believe we should do all we can to keep our U. S. workers busy.

By allowing the mine to expand, we will keep our citizens working and thus "feed" ourselves, by "expanding" our economy. In other words, creating solid jobs and steady growth, for not only the 320 F/C employees, plus the construction workers, but the thousands of "hidden" workers that supply all of these thousands of items.

In response to "visual impact along I-80", anything done will be a welcome addition to the view along that roadway. I have been along I-80 many times and look forward to the mining activities and their "impacts". Similar "impacts" along I-80, close to the Salt Flats near Wendover, would also be welcome, along with the jobs. Please don't misunderstand my comments about sites along I-80, be it in Nevada or other areas in the West. I grew up in Wyoming and the only real problem with Wyoming, is the lack of jobs. I believe we [ALL of US] have robbed ourselves of jobs, and if we're not careful, we will rob our children of their future.

I agree 100% that we must take care of our state and our country, but if we don't have jobs, how can we be around to pass the task of "continuing on" to our next generation?

I urge you and your team to do all you can to help this project move forward.

Thank you for your support and efforts concerning mining issues.

Sincerely,



Glenn Lewis
311 Oakshare Lane
Elko, Nv. 89801

Response to Letter 2

2-1 Comment noted.

Letter 3



United States Department of the Interior

FISH AND WILDLIFE SERVICE
NEVADA STATE OFFICE
4600 KIETZKE LANE, SUITE 125C
RENO, NEVADA 89502-5055

August 11, 1997
File No. BLM 10-4

Memorandum

To: District Manager, Winnemucca Field Office, Bureau of Land Management,
Winnemucca, Nevada (Attn: Ken Loda)

From: Acting State Supervisor, Nevada State Office, Reno, Nevada

Subject: Florida Canyon Mine Draft Environmental Impact Statement

The Fish and Wildlife Service has reviewed the June 1997 Draft Environmental Impact Statement (EIS) for the Florida Canyon Mine Expansion and Comprehensive Reclamation Plan. Florida Canyon Mining, Inc., proposes to construct new facilities and expand existing gold mining operations within the Inlay Mining District, Pershing County, Nevada. The project would include expansion of the open pit and north and south waste rock dumps, and development of a new south heap leach pad, haul road, solution ponds, solution corridor/road, plant, monitoring wells/road, sediment ponds, diversion channels, exploration drill sites and roads, realignment of an access road, and various support facilities. Approximately 860 acres would be disturbed by the mine expansion, as proposed. The following comments are provided for your consideration in preparing a final EIS.

GENERAL COMMENTS

- 3-1 [The Service supports the North Extension of the Heap Leach Pad Alternative to reduce impacts to upland vegetation and associated wildlife habitat by 143 acres.
- 3-2 [The description of the Proposed Action did not include prolonged pit dewatering. However, it is stated on page 3-32 that pit dewatering is occurring at a rate of 70 gallons per minute. The final EIS should describe how this water would be used or where it would be discharged. If appropriate, the final EIS should describe potential impacts of dewatering on streams, riparian vegetation, and wildlife habitat.
- 3-3 [

Response to Letter 3

- 3-1 Comment noted. The BLM's rationale for selecting the Proposed Action as the agency-preferred alternative is provided in Section 1.5, Agency-Preferred Alternative of the Final EIS.
- 3-2 Pit dewatering would take place through active mining phases of the Proposed Action. The maximum dewatering rate (see Section 3.3.2.1 of Water Resources and Geochemistry, under Groundwater Impacts [page 3-44]) is estimated to be 370 gpm while the dewatering rate to maintain the current water surface elevation of about 4,320 feet is 70 gpm. All water derived from pit dewatering activities would be used as process water or for dust suppression. "Prolonged" dewatering is not included in the Proposed Action because it has occurred under previous approvals.
- 3-3 Dewatering impacts to surface water bodies are described in the Draft EIS in Section 3.3.2.1 of Water Resources and Geochemistry, under Pit Dewatering (page 3-45). All streams in the vicinity of the pit are thought to be ephemeral, and water table impacts (drawdown) would not have any impact on these creeks or associated riparian vegetation and wildlife habitat.

Letter 3 Continued

District Manager

File No. BLM 10-4

- 3-4 [The scope and analysis of cumulative impacts and the discussion on hazardous materials was thorough and well written. The description of interrelated projects, and past and present actions which may cause cumulative impacts, was notable.

SPECIFIC COMMENTS

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.2.8 Proposed Action: Storm Water Control, page 2-15:

- 3-5 [It is stated in the first paragraph that runoff from up slope of the mine would be prevented from contacting mine ore and waste rock by diversions around mine operations. However, in the fourth paragraph, it is stated that Florida Canyon drainage would be re-established and flow would occur over the backfilled portion of the pit (waste rock) and also through a portion of the south waste rock dump. These statements seem contradictory. The final EIS should clarify how stream flow over the backfilled portion of the pit and south waste rock dump would affect water quality after mining operations have ceased.

2.2.15.5 Seeding Mixtures and Rates, Table 2-4, page 2-29:

- 3-6 [We recommend using only native species in reclamation mixtures to restore biological diversity. We suggest the goal of restoration be to restore native vegetation and control erosion, but not necessarily to increase forage potential above baseline conditions.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.3.1 Water Resources and Geochemistry: Affected Environment, Geochemistry, Kinetic Test Results, page 3-21:

- 3-7 [Reference is made to Table 3-6; however, this table is missing and Table 3-26 is in its place.

3.3.2 Water Resources and Geochemistry: Environmental Consequences, Proposed Action, Surface Water Impacts, pages 3-43 to 3-44:

- 3-8 [The final EIS should present the analysis to support the conclusion that backfilling will be adequate to prevent a shallow marsh or lake from forming in the pit.

Response to Letter 3

- 3-4 Comment noted.

3-5 Runoff from up slope of the mine would be diverted around the operation during active mining under the Proposed Action. Florida Canyon drainage would be re-established over the backfilled pit which would occur after cessation of active mining activities and as a part of mine reclamation. Please refer to Responses to Comments 1-1 and 1-6 for a discussion of water quality impacts due to infiltration of water into the pit backfill.

- 3-6 As stated in the Draft EIS, the reclamation objectives include the following: "Revegetation of disturbed areas, excluding pit highwalls, using plant species adapted to site conditions in order to establish a long-term productive biotic plant community compatible with proposed future land uses." The BLM considers a revegetation plant mix composed of native and introduced species to be the most effective approach to achieving these goals, as demonstrated by the previous and ongoing successful reclamation at the mine site. For reclamation projects, the BLM follows Manual 1745, *Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants*, which is in compliance with the applicable Resource Management Plan, Executive Order 11987 (Exotic Organisms). The yellow sweetclover is used as a short-lived nitrogen fixer and will be outcompeted by the shrubs included in the mix in the long-term. Russian wildrye is a very hardy, drought-tolerant grass which will establish quickly but not compete with the native Indian ricegrass. The native wildrye grasses usually need higher precipitation than is available in the project area for successful establishment. These species that establish quickly are used because it is extremely important to achieve vegetative cover establishment within 1 to 2 years to avoid invasions by pervasive annuals such as mustard species and cheatgrass.

- 3-7 In the Draft EIS, Table 3-26 was mistakenly placed where Table 3-6 should be located. A copy of Table 3-6 is provided in Appendix B of the Final EIS.

- 3-8 The conclusion that a pit lake would not form is based upon a comparison of the pre-mining groundwater level with the lowest elevation of the pit backfill. The pre-mining groundwater elevation was estimated at 4,430 based upon the elevation at which the mine began dewatering activities during excavation of the current mine pit and upon the steady-state modeling of pre-mining groundwater levels conducted by BAI (1997). The lowest point in the pit backfill area is 4,450 feet (see Figure 2-2 and Map 2-3) or 20 feet above pre-mining groundwater elevation. The pre-mining groundwater elevation is considered a conservative estimate of the post-mining groundwater elevations.

Letter 3 Continued

District Manager

File No. BLM 10-4

3.3.2 Water Resources and Geochemistry: Environmental Consequences, Proposed Action, Groundwater Impacts, page 3-51:

- 3-9 [We recommend the final EIS address whether upland vegetation in the planning area is dependent on ground water and, if so, the final EIS should address the affects of ground water drawdown on upland vegetation.

3.7.2 Wildlife and Fisheries Resources: Environmental Consequences, Proposed Action, pages 3-83 to 3-87:

- 3-10 [It is stated on page 3-85 that "mine development (including exploration activities) could result in the loss of eggs or young," and "Loss of or disturbance to an active nest site could adversely affect breeding birds, potentially resulting in nest abandonment, loss of the territory, and loss of productivity for that breeding season, which would be a violation of the Migratory Bird Treaty Act." However, there are no provisions in the Potential Mitigation and Monitoring section (3.7.4) to prevent these adverse impacts and potential violations of the Migratory Bird Treaty Act (Act), except for breeding raptors. We recommend an additional mitigation measure be implemented to prevent potential violations of the Act. We recommend land clearing activities be conducted outside of the avian breeding season. If this is not feasible, we recommend a qualified biologist survey the construction zone prior to land clearing. If active nests are located, a protective buffer should be delineated around the nest site (depending on the requirements of the species) and the entire area avoided to prevent destruction or disturbance to the nests until they are no longer active. Clearing could take place, however, if no active nests are found.

- 3-11 [The document indicates that certain bat species exhibit a delayed influence from cyanide poisoning. The statement should indicate that delayed effects of cyanide exposure may also occur in birds. Sublethal exposures of cyanide to birds and mammals in laboratory studies have caused physiological effects (Pritsos 1996; Ma and Pritsos 1997; Pritsos and Ma 1997).

- 3-12 [The EIS indicates that if a mine has an overflow pond that contains cyanide solution 2 days out of 5, then the Nevada Division of Wildlife requires either exclusion devices or the mine must neutralize the cyanide immediately. We recommend no allowance for cyanide in ponds without exclusion of birds and mammals. Also, merely monitoring the top of leach heaps to prevent cyanide pooling or wildlife access, if pooling results, is inadequate. Prevention of wildlife access to pooling of solution, possibly with net panels, should be required.

- 3-13 [We are pleased to note that additional containment structures have been built to prevent a cyanide spill from leaving the mine site. We trust that containment is now adequate for the worst case scenario spill.

Response to Letter 3

- 3-9 The depth to groundwater that would be affected by mining ranges from 100 to 200 feet below ground surface and is not available to upland vegetation. Hence, no impacts to upland vegetation are expected to occur as a result of groundwater drawdown. Also see Responses to Comments 1-5 and 3-3.

- 3-10 Please review Response to Comment 1-7.

- 3-11 Based on your comment, the text on page 3-86 of the Draft EIS has been modified to include avian species and reflect these recent data on potential delayed responses to cyanide exposure. Please refer to Table 3-1 to review this revision.

- 3-12 Please note that these concerns were addressed in the Draft EIS. In Section 2.2.14.6 of Environmental Protection Measures and Monitoring (page 2-25), and in Section 3.7.2.1 of Wildlife and Fisheries Resources (page 3-86), the text indicates, "FCMI has committed to netting and fencing these new solution ponds, event ponds, and overflow ponds, in order to protect wildlife resources." It is acknowledged that any pond that may contain cyanide solution would have netting and fencing installed to restrict any access by area wildlife. The text for Section 3.7.2.1 of Wildlife and Fisheries Resources, has been revised to clarify this issue. Please see Table 3-1 for this revision. Regarding the potential pooling of cyanide on the heap leach facilities, FCMI has committed to specifically monitoring the heap leach facilities for potential cyanide pooling in a new wildlife protection measure (see Table 3-1). As stated in this committed measure, additional protection measures would be implemented (e.g., netting), if warranted.

- 3-13 Comment noted.

Letter 3 Continued

District Manager

File No. BLM 10-4

1.8.2.1 Proposed Action, page 1-97:

3-14

It is stated that direct mortalities to adult or young burrowing owls may occur. Burrowing owls are protected under the Act and, therefore, such impacts may be a violation of the Act. We recommend mitigation measures be developed to prevent mortalities of burrowing owls and other migratory birds (see above). Fledgling burrowing owls often continue to use their nesting burrow until they disperse from the area. Therefore, we recommend all construction activities which may affect nesting burrows occur after the owls are expected to have dispersed from the area and that the burrows are dug out using hand tools to ensure no owls remain in the burrow.

Please contact Pamela Repp or Stanley Wicmeyer at (702) 784-5227, if you have any questions regarding our comments.


Chester C. Rychman

cc:

State Director, Bureau of Land Management, Reno, Nevada
Administrator, Nevada Division of Wildlife, Reno, Nevada
Regional Manager, Nevada Division of Wildlife, Fallon, Nevada
Administrator, Nevada Division of Environmental Protection, Carson City, Nevada
Chief, Office of Federal Activities, Environmental Protection Agency, San Francisco, California
Assistant Regional Director, Klamath and California Ecoregion, Fish and Wildlife Service,
Portland, Oregon
Assistant Regional Director, Interior Basin Ecoregion, Fish and Wildlife Service,
Portland, Oregon

Response to Letter 3

- 3-14 Please review the Response to Comment 1-7, regarding the protection of breeding avian species, including the burrowing owl.

Letter 3 Continued

District Manager

File No. BLM 10-4

References

- Ma, J., and C. A. Pritsos. 1997. Tissue-specific bioenergetic effects and increased enzymatic activities following acute sublethal peroral exposure to cyanide in the mallard duck. *Toxicol. Appl. Pharmacol.* 142: 297-302.
- Pritsos, C. A. 1996. Mitochondrial dysfunction and energy depletion from subchronic peroral exposure to cyanide using the Wistar rat as a mammalian model. *Toxic Subst. Mechan.* 15: 219-229.
- Pritsos, C. A., and J. Ma. 1997. Biochemical assessment of cyanide-induced toxicity in migratory birds from gold mining hazardous waste ponds. Pages 124-130 *In* B. L. Johnson (ed.) *Proceedings of the international congress on hazardous waste: Impact on human and ecological health*. U.S. Publ. Health Serv.-Agen. Toxic Subs. Dis. Reg., Atlanta.

Letter 4



DEPARTMENT
OF CONSERVATION
AND NATURAL RESOURCES

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF WILDLIFE

1100 Valley Road
P.O. Box 10678
Reno, Nevada 89520-0622
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FILE NO. N-107

WILLIAM A. SMITH
Nevada Dept.

August 7, 1997



Ms. Julie Butler
Nevada State Clearinghouse
Planning Division
Blasdel Bldg, Room 200
Carson City, Nevada 89710

RE: DEIS Florida Canyon - SAI# E1997-156

Dear Ms. Butler:

The Nevada Division of Wildlife is a cooperating agency and active participant in the development of the Draft Environmental Impact Statement for Florida Canyon Mine. Our efforts with Florida Canyon Mining and federal regulatory agencies have resulted in this comprehensive document to support the project's approval with the Bureau of Land Management.

4-1 Unavoidable displacement of mule deer from historical winter range will occur on this project. Reclamation efforts by the mine have resulted in favorable vegetation to mitigate the adverse impacts of this project. We recommend the continuation and expansion of reclamation projects with Forage Kochia as a new forage species for mule deer. Wildlife enhancement projects could include an off-site big game water development on the west slopes of the Humboldt Range.

4-2 Project design includes diversions and impoundments for solution containment and run-off events. We seek permit assurances that these structures are designed for zero discharge to ephemeral streams destined to Byspatch Reservoir. We would appreciate additional verbiage to final permits or decisions.

4-3 Protective and mitigative measures to protect bats during this project are adequate. We appreciate the efforts to avoid sensitive areas and construct bat gates to protect the existing population. We request that site specific consultation for future drilling plans affecting the Piedmont Area be directed to our agency.

Response to Letter 4

4-1 The BLM does not recommend the use of forage kochia in the reclamation seed mix because of its aggressive growing habit, prolific seed production, and the high likelihood that it would compete with desirable species and spread outside of the mine site. The BLM uses forage kochia in areas dominated by non-native annual species; for example, it can outcompete cheatgrass. Current reclamation test plots have proven that native shrubs can be established at the FCMi mine site.

4-2 Please refer to Mitigation Measure 1 for Wildlife and Fisheries Resources in Section 3.7.4 of Wildlife and Fisheries Resources in the Draft EIS, which states that FCMi would coordinate with both the BLM and NDCW to develop appropriate mitigation measures for the loss and fragmentation of mule deer winter range. Reference is made to possible off-site habitat enhancement, including guzzler placement.

4-3 Please refer to Section 2.2.6, South Heap Leach Pad, Section 2.2.7, South Adsorption Plant (Process Area), and Section 2.2.8, Storm Water Control, for more detailed discussions of solution containment design features.

Letter 4 Continued

Ms. Julie Butler
August 7, 1997
Page 2

We recommend that the Draft Environmental Impact Statement be approved to support the issuance of necessary federal and state permits. If there are any further questions or need for additional input, please contact Mr. John Gebhardt, Mining Biologist, 423-3171.

Sincerely,

WILLIAM A. MOLINI, ADMINISTRATOR



Richard T. Heap, Jr.
Regional Manager
Region I

CC: Habitat, Reno
Chris Hampson
Larry Neel
Jim French
Florida Canyon Mine, Inc.

Response to Letter 4

4.4 Comment noted.

Letter 5



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

In Reply Refer To:
Mail Stop 423

AUG 15 1997

MEMORANDUM

To: Ken Loda, Bureau of Land Management
From: James F. Devine *James F. Devine*
Senior Advisor for Science Applications
Subject: Review of Draft Environmental Impact Statement for the Florida Canyon Mine, Mine Expansion and Comprehensive Reclamation Plan, Pershing County, Nevada

The U.S. Geological Survey (USGS) has reviewed the subject draft environmental impact statement (EIS) and offers the following comments.

Section 3.3.1.1, Geochemistry, page 3-24, second paragraph

- 5-1 [A statement should be included that relates the high concentrations of trace metals to rock types.
Section 3.3.1.2, page 3-24, Surface Water Inventory, second paragraph, and Figure 3-3, page 3-26

- 5-2 [Streamflow values in the text and the stream hydrographs in the figure appear to be based on streamflow data published by the USGS in Water-Supply Papers 1314 and 1734. If so, then these publications should be cited as the sources of the data. In addition, the stream gaging stations where flows were measured should be clearly identified.

Section 3.3.1.2, Surface Water Inventory, page 3-24 to 3-27

- 5-3 [The drainages listed in this paragraph are not entirely consistent with drainages shown on maps 3-5 and 307. For instance, Black Canyon is shown on map 3-5, but is not mentioned in the text or labelled on map 3-7. Wiley Gulch is not labelled on map 3-5, but is labelled on map 307 and is mentioned in the text.

Section 3.3.1.2, Surface Water Quality, page 3-29

- 5-4 [Water-quality data discussed in this section were collected by USGS at the gaging station on the Humboldt River near Rye Patch. These data are stored in the USGS National Water Information System data bases and can be obtained by contacting USGS in Carson City, Nevada. The source and availability of these data should be discussed in the EIS.

Response to Letter 5

- 5-1 Comment noted. While the relationship between trace metals concentrations may be of scientific interest, the information will not be critical to the decision to be made by BLM. Furthermore, rock type within the mineralized zones at the mine are fairly uniform (Grass Valley siltstone); trace metal concentrations are more likely to be related to mineralizing events rather than to rock type.

- 5-2 The data for the hydrographs in Figure 3-3, p. 3-26 were retrieved from the USGS Internet site (U.S. Geological Survey Surface Water Data Retrieval). Average monthly flows for the Humboldt River were calculated from the Imlay gage upstream of Rye Patch Reservoir (gage # 10333000; 1946-1997); the Humboldt-Lovick Irrigation, Light and Power Company Feeder Canal Near Imlay (HLIL and PCo Feeder) (gage # 10332500; 1951-1976); and the Humboldt River Near Rye Patch, NV (gage # 10335000; 1896-1997). The Imlay and HLIL PCo Feeder were summed to assess average monthly flow of the Humboldt River above Rye Patch Reservoir.

- 5-3 Only major drainages are depicted on Map 3-5. Township Range and feature data for this map were derived from the USGS 1:100,000 scale maps available over the Internet; topographic detail was derived from the USGS 1:250,000 scale Digital Elevation Model also available over the Internet. Map 3-7 names only those drainages potentially affected by the proposed project.

- 5-4 Water quality data were received from Mr. Bob Bostic of the USGS, Carson City office. The data included a fairly complete suite of parameters from 1951 to 1986 from the Rye Patch gaging station on the Humboldt River (gage # 10335000). A less complete data set was available from the gage upstream of Rye Patch Reservoir (gage # 10333000), which were not described in the water quality analyses due to the sporadic nature of sampling dates and the parameters analyzed.

Letter 5 Continued

K. Lode, BLM

2

Section 3.3.1.3, Groundwater

5-5 [Several references cited in this section are not listed in the References section. These references are Broadbent & Associates, 1995 and 1997; Harrill, et al., 1988; Thomas, et al., 1986, and USGS, 1985

Section 3.3.1.3, Groundwater, Map 3-8

5-6 [The legend on this map should indicate that depths to ground water represent conditions in 1974.

Section 3.3.1.3, Fault Zones, page 3-34, second paragraph

5-7 [This paragraph states that water levels were monitored in well MW-23C during test pumping of production well PW#4. The paragraph further states that test results indicate that the range-front fault between the two wells does not act as a barrier to ground-water flow. Does this mean that water levels in well MC-23C declined as a result of pumping well PW#4? This paragraph should be clarified.

Section 3.3.1.3, page 3-36, Figure 3-4

5-8 [This figure should show the clay bed and upper and lower aquifers discussed in the first three paragraphs of page 3-34.

Section 3.3.1.3, Ground-water Movement, page 3-34

5-9 [Ground-water contours on map 3-9 and the pre-mining water level on Figure 3-4 appear to represent conditions in the upper aquifer. Assuming that this is the case, this section should also have a discussion of ground-water conditions in the lower aquifer because this aquifer could be the source of much of the water used at the mine. Some issues that should be addressed include, the head differences between the upper and lower aquifer and whether there is potential for upward ground-water flow between the aquifers. Could declining heads in the lower aquifer result in water-level declines in the upper aquifer?

Section 3.3.2, Ground-water Impacts, page 3-44 to 3-54

5-10 [To aid in evaluating the model (pit dewatering, page 3-45) a statement describing the conceptualization and simplifying assumptions would be useful.

Copy to: USGS State Representative, Water Resource Division, Nevada
Director, Office of Environmental Policy and Compliance

Response to Letter 5

5-5 Comment noted. See Table 3-1 for reference corrections.

5-6 References provided in the legend of Map 3-8 indicate the year of the information sources used to construct the map.

5-7 The water level in MW-23C declined as a result of pumping in PW #4 which led to the conclusion that the range-front fault does not act as a flow barrier.

5-8 Comment noted.

5-9 You are correct that the groundwater contours on Map 3-9 and the pre-mining water level on Figure 3-4 represent conditions within the upper aquifer. The lower aquifer is not discussed in comparable detail because pit excavation and dewatering activities would take place only within the upper aquifer. Water level data for the upper aquifer obtained during pumping of the lower aquifer indicates that there is little hydraulic communication between the two aquifers. Hence, continued declining heads within the lower aquifer is not expected to adversely impact the upper aquifer.

5-10 For a discussion of the conceptual model of groundwater flow in the mine area please refer to pages 3-34 through 3-37 of the Draft EIS. Also, please refer to Responses to Comments 1-3 and 1-4 for a discussion of model input and assumptions. A complete copy of the following report is available for review at the BLM District Office in Winnemucca, Nevada:

Broadbent and Associates, Inc. (BAI). 1997. Hydrogeologic Study and Groundwater Flow Model for Florida Canyon Mining, Inc., Environmental Impact Statement. Report Submitted to Florida Canyon Mining, Inc., Imlay, Nevada. May 1997.

Letter 6



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

Ron Wenker
District Manager
Bureau of Land Management
Winnemucca District
5100 East Winnemucca Boulevard
Winnemucca, NV 89445

Attention: Ken Loda

Dear Mr. Wenker:

The U.S. Environmental Protection Agency has reviewed the Draft Environmental Impact Statement (DEIS) for the Florida Canyon Mine Expansion and Comprehensive Reclamation Plan, Pershing County, Nevada. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and Section 309 of the Clean Air Act.

The DEIS evaluates alternatives for expansion of the Florida Canyon Mine, including expansion of the open pit, new or relocated heap leach facilities, overburden disposal areas, exploration for extensions of the ore body, and ancillary facilities. The Proposed Action Alternative would disturb 447 acres of public lands and 413 acres of private lands over a mine operation life of five years.

EPA has rated this DEIS as EC-2 -- Environmental Concerns-- Insufficient Information (see enclosed "Rating Definitions and Follow-Up Actions"). Our concerns are based on the fact that the Proposed Action would unnecessarily disturb 143 more acres (860 in total) than the North Expansion of the Heap Leach Pad Alternative, which would disturb 717 acres of land. It is also unclear from the discussion of impacts to waters of the U.S. that facilities designed under either the Proposed Action Alternative or the North Extension of the Heap Leach Pad Alternative constitute the least environmentally damaging practicable alternative in accordance with guidelines pursuant to Clean Water Act Section 404. We also have concerns regarding how the site was geochemically characterized and have recommendations for facilities design and additional monitoring. We request additional information in the Final Environmental Impact

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Letter 6 Continued

Statement (FEIS). Our specific comments on this DEIS are enclosed.

We appreciate the opportunity to review this DEIS. Please send a copy of the FEIS to this office at the same time it is officially filed in our Washington, D.C., office. If you have any questions, please call me at (415) 744-1584, or have your staff contact Jeanne Geseibracht at (415) 744-1576.

Sincerely,

David J. Farrell
David J. Farrell, Chief
Federal Activities Office

002887/97-167

Enclosures

cc: Leo Drozdoff, NDEP
Nevada Division of Wildlife
Kevin Roukey, U.S. Army Corps of Engineers
Mary Jo Elpers, U.S. Fish and Wildlife Service

Letter 6 Continued

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EQ-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other proper alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

Letter 6 Continued

Florida Canyon DEIS
EPA Comments - August, 1997

General Comments

- 6-1 The North Extension of the Heap Leach Pad Alternative would disturb 143 fewer acres than the Proposed Alternative, including disturbing 0.1 acre less waters of the U.S. The North Extension of the Heap Leach Pad Alternative appears to be the environmentally preferable action alternative because it would result in a reduction of impacts to soils, vegetation, and wildlife, and would reduce reclamation costs as well. We could find no justification in the DEIS for selecting the Proposed Action and, therefore, urge BLM to select the North Extension of the Heap Leach Pad Alternative as the Preferred Alternative.

Water Resources

- 6-2 The DEIS (p. 3-29) mentions the jurisdictional analysis conducted by SWCA (1997) for this proposed project and also mentions a Nationwide Permit 26 issued by the U.S. Army Corps of Engineers for the current mine operations. However, it is unclear whether the additional 4.7 acres of waters of the U.S. that would be filled by the proposed project will be the subject of a Nationwide Permit or an individual permit. The FEIS should clarify this. If an individual permit is needed, the FEIS should include Clean Water Act Section 404(b)(1) alternatives analysis that designates the least environmentally damaging practicable alternative (LEDDA) as specified by the EPA Section 404(b)(1) Guidelines (see 40 Code of Federal Regulations 230). It is not clear from the DEIS that the mine facilities as designed in either the Proposed Action or the North Extension of the Heap Leach Pad Alternative constitute the LEDDA. If an individual permit is required, EPA will need more detailed documentation as to why less environmentally damaging alternatives are not feasible or practicable in terms of cost, logistics, and technology.
- 6-3 Page 3-27 paragraph 2. There is no specific discussion of the two springs in the area and how they could be affected by dewatering operations during mining and in the post mining years. Map 3-13 depicts the ultimate drawdown contours, but the springs are not included on the map. Map 3-7, Waters of the U.S., does not depict the springs either. The FEIS should discuss the expected drawdown at the springs and the impacts to vegetation from drawdown.
- 6-4 The FEIS should discuss the potential impacts of using the hydrothermal waters that are high in salts and metals and, in some cases, exceed drinking water standards (DEIS, p. 3-35). This is especially important if the water is used in any way that may cause it to interact with surface water after reclamation.

Response to Letter 6

- 6-1 Comment noted. The BLM's rationale for selecting the Proposed Action as the agency-preferred alternative is provided in Section 1.5, Agency-Preferred Alternative of the Final EIS.

- 6-2 Under the Proposed Action, 3.1 acres of Waters of the United States (WUS) would be filled, not 4.7 acres as indicated by the comment. The 4.7 acres of WUS refers to the total acreage of WUS within the proposed permit boundary. The North Extension of the Heap Leach Pad Alternative would fill 3.0 acres of WUS.

An individual Corps of Engineers (USCOE) Section 404 permit filed on behalf of FCMi is now under Public Notice. This permit application requests authorization for placement of fill into 3.1 acres of non-wetland WUS, as described in the Proposed Action.

The USCOE has determined that the following satisfies the alternatives analysis/NEPA requirements under Section 404(b)(1) of the Clean Water Act: The EIS analyzes both the Proposed Action and the North Extension of the Heap Leach Pad Alternative in detail; Section 2.5 of the Draft EIS addresses Alternatives Considered but Eliminated from Detailed Analysis; and the Agency-Preferred Alternative (see Section 1.5) of the Final EIS.

- 6-3 Potential drawdown effects to the springs in the project vicinity are discussed in Section 3.3.2.1 of Water Resources and Geochemistry (page 3-51). In addition, these springs are not illustrated on Map 3-13, since they occur outside the proposed permit boundary and expected drawdown cone.

Both the Florida Canyon spring and the Humboldt Canyon spring arise from contact points between rhyolite overlying the Prida Limestone where seepage into the rhyolite or upslope colluvium exfiltrates. The potentiometric surfaces depicted on Map 3-10 model the steady-state groundwater levels in the Grass Valley Formation and the valley colluvium and lacustrine deposits. The drawdown in the Grass Valley and colluvial aquifer is depicted in the Broadbent modeling; the up-gradient rhyolite aquifer is not affected by drawdown in the lower aquifer. In addition, the Humboldt Canyon and Florida Canyon springs occur at 5,800 and 6,000 feet elevation, respectively, or about 200 to 400 feet higher than the steady state potentiometric surface modeled for the lower aquifer. Therefore, no impacts to these springs from drawdown of the Grass Valley/colluvial aquifer would occur. Depicting these on the drawdown contour map would be misleading.

- 6-4 Hydrothermal waters would only be used as process water for 3 months of each year for the next five years, and this level of usage may extend for another five years after that. Process water is used to circulate process solutions through the heap and the solution adsorption plant. Process water that is not consumed by evaporation is recirculated through the system. During reclamation hydrothermal waters might be used to rinse the heap if higher quality surface waters are not available by that time. However, once the heap has drained towards the end of reclamation, hydrothermal waters would no longer be used at the mine and there would be no risk of contact with surface waters. The source of hydrothermal water is a set of groundwater wells which will all be properly plugged during reclamation.

Letter 6 Continued

- 6-4 The use of the water as a backup source to neutralize the heaps is questionable.

Geochemical Characterization

- 6-5 The potential for low pH waters and related contamination to enter the Humboldt River or to have other significant impacts appears to be low if only 0.2 percent of the waste rock has a moderate potential to produce acid rock drainage (DEIS, p. 2-23). In addition, the water table is generally at least several hundred feet below dumps, and the allium has a high acid neutralization potential (ANP). It appears, however, that there are some specific flaws in the study presented in the DEIS and the low acid generating potential (AGP) is not completely supported by data. Furthermore, the FEIS should identify the criteria used to determine a "moderate" potential to generate acid.
- 6-6 The acid-base accounting study (ABA) generally does prove that the overall AGP for most ore types is less than significant. On page 3-19, the DEIS states that data from samples of rock mined and rock to be mined are grouped together because of similar statistics. The FEIS should provide assurance that the population of samples is representative of all ore types. It is not necessarily representative because it all comes from the Grass Valley Formation. In the appendix, sample elevation is given. The FEIS should provide sample depth. Does Florida Canyon Mining Inc. (FCMI) knows where the sulfide ores are? If not, eight samples per quarter probably would not be sufficient to find them. They do not appear to be represented in the kinetic tests.
- 6-8 We have concerns regarding statements in the DEIS about the humidity cell tests. The DEIS (p. 3-21) states that the ANP in each sample is consumed faster than the AGP, and in several samples complete ANP consumption occurred. The DEIS concludes that these results support static test results which indicate acidic seepage would not develop under field conditions. According to Table 3-6, however, the two samples with 100 percent ANP consumed, still respectively have 99.6 % and 92.0 % AGP. They will continue producing acid, and this would not be neutralized. It is dangerous to conclude that these tests apply to all field conditions. They are limited.
- 6-9 The DEIS (p. 2-8) states that about 30 million tons of run of mine ore (ROM) will be stockpiled (no location given) and may or may not be processed. It is unclear whether any of this ore would have a high acid generation potential (AGP). If it is stockpiled, and acid generating and not processed, it can not be handled by the special waste rock management methods proposed in

Response to Letter 6

- 6-5 The BLM believes that the prediction of low acid generating potential is supported by the data. Mineralogical studies of rock from the mine as well as more recent analysis of rock samples by the modified Sobek method indicate that the pyrite content of ore and waste rock, except for the SULF rocks, is less than 1 percent. Sulfur is present within rocks at the mine in non-reactive forms and within alunite, a sulfate mineral which dissolves relatively slowly. Hence, all the ore and waste rock, with the exception of SULF rocks, have no acid generation potential. SULF rocks would be segregated from other rocks at the mine and would be isolated within the waste rock dumps to reduce likelihood of acid formation (see Section 2.2.14.3, Special Waste Rock Management).
- The term "moderate" potential to generate acid is an interpretation of the geochemical data presented in the Geochemical Site Characterization Report (SMI 1997). This interpretation is based upon the fact that 0.2 percent of the waste rock (SULF rocks) are potentially acid-generating and that the acid generation potential (AGP) of the SULF rocks is relatively low (ranges from 0.94 to 27.8).
- 6-6 All past, present, and future mining at the mine would occur within the Grass Valley Formation and Quaternary alluvium. As discussed in Section 3.3.1.1, Geochemistry, several alteration zones were identified in the Grass Valley Formation. Samples used in the geochemical characterization of rocks at the mine were collected from every alteration type within the Grass Valley Formation which has already been mined or that has yet to be mined (SMI 1997). Hence, the population of sample results is believed to be representative of ore and waste at the mine.
- 6-7 All waste rock and ore samples submitted for static ABA testing are located in three-dimensional space and were plotted on slice maps of the mine area. By examining these maps the elevation (or depth) of each sample was compared to the depth of pit excavation under the Proposed Action and found to cover the full range of anticipated mining depths. In this manner, SMI (1997) determined that all waste rock types and ore to be mined at the site have been adequately characterized. FCMI has identified the location of all the SULF rocks and plotted those locations on slice maps of the mine area.
- 6-8 The AGP values from static testing used to compare with the results of humidity cell testing are based upon data which included sulfur within alunite as pyritic sulfur. This led to an overestimation of the AGP for the samples and the incorrect assumption that the AGP present within the samples would dissolve at the same rate as pyrite. Further testing indicated most of the sulfur within samples from the mine is present within alunite, a mineral containing sulfur as sulfate which dissolves slowly and does not generate acid. What little pyrite is present within samples from the mine was shown through petrographic analysis to be encapsulated within quartz where it is likely to be non-reactive. Therefore, even though the ANP is consumed, the remaining AGP will not produce acid. Also please refer to Response to Comment 6-5.
- 6-9 The 30-million tons of run-of-mine stockpile(s) would be placed within western toes of the north and/or south waste rock dumps. As discussed in Section 2.2.4, Waste Rock Dumps, this 30-million tons of rock would either be removed and processed as ore at a later date, or would be left in place as a portion of one or both waste rock dumps. No SULF rocks would be placed within the run-of-mine stockpile(s) to ensure that these portions of the waste rock dump(s) would have no acid generation potential.

Letter 6 Continued

3

Florida Canyon 0016
EPA Comments - August, 1992

- 6-10 the DEIS (p. 2-23). With regard to the special waste rock management system, there are no guarantees that this method would isolate the potentially acid producing rock from water or air (pp. 2-23 and 3-37, 3-43). With an alluvial cover, rainwater would still infiltrate the dump rock and it is doubtful if all oxygen would be consumed. Furthermore, hydrogen and sulfate production can occur without oxygen if ferric iron is present. The FEIS should provide more detailed information regarding the ANP of the surrounding rock.

Facilities Design

- 6-11 The DEIS (p. 2-5) states that stormwater will flow over a portion of the south waste rock dump via a rip rapped channel. Diverting stormwater over or onto waste rock piles is not an effective method of preventing contamination. The stormwater should be diverted around waste rock materials and onto native materials. EPA recommends that all drainages through waste rock be redesigned to avoid traversing waste rock.

- 6-12 The potential to have a rupture of the liner beneath the leach pad must be discussed with more detail. If the determination of whether faulting is less than or more than 10,000 years has been made then it should be presented. The availability of the lake bed sediments should have aided in this determination. A thicker subbase pad could be in order if there is a likelihood of rupture.

- 6-13 According to the DEIS (p. 3-43), FCMI would partially fill the open pit to a level above the premining water table. The FEIS should identify the final pit bottom elevation and the ultimate, post-reclamation groundwater level.

Monitoring and Mitigation

- 6-14 EPA recommends that at least one additional monitoring well be placed on the north edge of the south dump expansion, and one monitoring well be located just west of the west side of the north dump. We recommend that FCMI collect an appropriate number of samples per quarter for AGP testing. We also recommend that BLM consider requiring several lysimeters to be placed strategically at the foot of or within waste dumps to monitor pH conditions over time.

Toxic Releases Inventory

- 6-15 BLM and FCMI should note that on May 1, 1997, EPA added metal mining to the list of industries that will be subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) and section 6607 of the Pollution Prevention Act of 1990. (See 40 CFR Part 372,

Response to Letter 6

- 6-10 The infiltration study of the waste rock dumps showed that seepage from the waste rock would not occur in less than 100 years. Furthermore, the low pyrite content of the waste, and the encapsulation of pyrite in quartz indicate that the acid generating potential is low for the waste rock (see Response to Comment 6-5). This is supported by the humidity cell tests which provide a wetting and oxygenation environment far more severe than what might be encountered under site conditions. However, FCMI has modified its special waste rock management plan by committing to the placement of a least 3 feet of compacted alluvium (in addition to 50 feet of oxide waste rock) around the non-oxide (SULF) rock to be isolated under the plan. This additional commitment would effectively result in the placement of two caps over the non-oxide (SULF) rocks (both the 3-feet of compacted alluvium and 1 foot growth media) to limit infiltration of oxygen and water, as well as the placement of a "liner" beneath the non-oxide (SULF) rocks to attenuate any possible dissolved constituents within seepage which might emanate from the non-oxide cell. The alluvium has the highest ANP (27.0) of any of the excavated material to be managed at the mine and has the capacity to attenuate metals concentrations within percolating rainwaters.

- 6-11 Comment noted. Diversion of storm water flow around the waste rock dumps would require additional impacts to undisturbed areas. Furthermore, the waste rock within the dumps does not present a substantial potential to contaminate infrequent surface flows. Please refer to Responses to Comments 1-1 and 1-6.

- 6-12 As noted on page 3-14 of the Draft EIS, there is a low probability that surface displacement would take place along the faults identified in the vicinity of the heap leach pad. This is based on the fact that displacement along similar fault zones within the western Great Basin has an average recurrence interval of 2,000 to 30,000 years. The probability of surface displacement during the service life of the leach pad was estimated using the historic seismicity rate for the western Great Basin described by Ryall and VanWormer (1980). This analysis showed that there is a greater than 99.9 percent probability that a surface faulting event would not occur at the site during a 10-year period. The service life of the proposed South Leach Pad is estimated at about 7 years.

- 6-13 Please refer to Response to Comment 3-8.

- 6-14 FCMI has committed to establishing a monitoring well that will be drilled east of the main pit to monitor groundwater levels before, during, and after planned pit dewatering (see page 3-34 of the Draft EIS and Table 3-1 of the Final EIS, Modifications to page 2-22). Based on your comment, FCMI also has committed to an additional protection measure to add up to three monitoring wells in the pit backfill for a total of up to four additional wells on the north edge of the south dump expansion.

On the west side of the north dump, there are four existing monitoring wells plus the mine's drinking water well. Therefore, it seems redundant to add another well to this area.

FCMI collects and composites samples from the active working faces (benches or active mine areas) throughout each quarter for AGP testing. The number of samples varies contingent upon the number of active mine areas. This has been as low as four composite samples per quarter in 1992 to as high as eight samples per quarter in 1996-97. At current mining rates the composite sample population is eight per quarter. As the mine expands, the sample population will increase and is projected to be as many as 16 composite samples per quarter. Given site conditions, modeling predictions, facility design, and geochemical conditions seepage from waste rock dumps, if any, would not be degraded in water quality; hence, lysimeters are not deemed necessary.

Letter 6 Continued

4

Florida Canyon DEIS
EPA Comments -- August, 1997

6-15

Addition of Facilities in Certain Industry Sectors; Revised Interpretation of Otherwise Use; Toxic Release Inventory Reporting; Community Right-to-Know; Final Rule, Federal Register, May 1, 1997, pages 23833-23892). Reporting for mining facilities will be effective beginning with the 1998 reporting year. The first reports from all metal mining facilities must be submitted to EPA and the State by July 1, 1999. For specific information regarding the final rule, you may wish to call Mr. Tim Crawford, EPA Headquarters, at (202) 260-1715; e-mail: crawford.tim@epamail.epa.gov.

Response to Letter 6

6-15 Comment noted.

Letter 7

BOB MILLER
Governor

STATE OF NEVADA



DEPARTMENT OF ADMINISTRATION

Capitol Complex
Carson City, Nevada 89710
Fax (702) 687-3983
(702) 687-4065

JOHN F. CASH
Director

August 14, 1997

Mr. Ken Loda
EIS Project Manager
Bureau of Land Management
Winnemucca Field Office
5100 W. Winnemucca Blvd.
Winnemucca, NV 89445

Re: SA1 NV # E1997-156

Project: Draft EIS - Florida Canyon Mine
Expansion Project (1793/3809) NV-020

Dear Mr. Loda:

7-1

Enclosed are the comments from the Nevada Department of Transportation, the Nevada Natural Heritage Program, and the Nevada Divisions of Water Resources, Wildlife, and Minerals concerning the above referenced project. These comments constitute the State Clearinghouse review of this proposal as per Executive Order 12372. Please address these comments or concerns in your final decision. If you have any questions please contact me at (702) 687-6367.

Sincerely,

A handwritten signature in cursive script, appearing to read "Julie Butler".

Julie Butler, Coordinator
Nevada State Clearinghouse/SPOC

Enclosures

Response to Letter 7

7-1 Comment noted.

Letter 8



BLM FIELD OFFICE

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION

2000 S. Stewart Street
Carson City, Nevada 89702

July 25, 1997



PSD 7.01

JULIE BUTLER COORDINATOR
NEVADA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
BUDGET DIVISION
BLASDEL BUILDING ROOM 204
CARSON CITY NV 89701

Dear Ms. Butler:

The Nevada Department of Transportation has reviewed the project titled DEIS - Florida Canyon Mine SAI#1997-156

Based on the information submitted, we have the following comments on the proposed project.

Staff has reviewed the above referenced Draft Environmental Impact Statement for mine expansion and comprehensive reclamation located adjacent to Interstate 80 near the Humboldt Interchange and the following comments apply:

- 8-1 [1. The Department of Transportation will require that a traffic analysis be completed to determine impacts to State facilities caused by the mine expansion and reclamation project. Please contact Ms. Debra Starnes at 688-1250 for more information regarding the traffic analysis.
- 8-2 [2. The Department of Transportation will require an occupancy permit for any work performed within the State's Right-of-Way. Please contact Ms. Nancy Dericco at 688-1250 for more information regarding the occupancy permit.
- 8-3 [3. The Department requires the use of only legal, permitted access onto State roadways. A change or an increase in the function of this property served by an existing access or street may require a new Right-of-Way occupancy permit application and approval.

The Department reserves the right to incorporate further changes and/or comments as the design review advances.

Response to Letter 8

- 8-1 The BLM has concluded that there would be no effect on state highway and road facilities as a result of the Proposed Action and Alternatives. This conclusion was based on the fact that the Proposed Action and Alternatives (with the exception of the No Action Alternative) represent a continuation of existing mining activities; no significant increases in the required work force or the transportation of equipment, supplies, and product are anticipated (see Section 3.10.2.1 of Land Use and Access, page 3-108). As a result, no changes in existing traffic volumes or patterns would occur, other than a short-term increase in construction-related traffic.

All heavy equipment that would be used during the construction phase would be brought to the mine site using standard semi trucks; the use of equipment requiring oversized semis (e.g., autoclaves) is not anticipated. However, performance of a traffic analysis is outside of the scope of this EIS and would be negotiated between FCMI and the Nevada Department of Transportation.

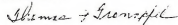
- 8-2 The Proposed Action and Alternatives would not require that any work be performed within state rights-of-way. Consequently, a state-based occupancy permit would not be required.
- 8-3 Comment noted. Please refer to the Response to Comment 8-1, above. The Proposed Action and Alternatives analyzed in the Draft EIS are not expected to result in a change or an increase in the function of state roadways.

Letter 8 Continued

Julie Butler
July 25, 1997
Page 2

Thank you for the opportunity to review this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Thomas J. Fronapfel".

Thomas J. Fronapfel, P.E.
Assistant Director - Planning

TJF:PAF:dg

Letter 9

NEVADA STATE CLEARINGHOUSE

Department of Administration
Budget and Planning Division
Blasdel Bldg., Rm. 200
(702) 687-4065
fax (702) 687-3983

RECEIVED JUN 26 1997

AUG 14 1997

DATE: June 25, 1997

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Health Division
Colorado River Commission
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PSL
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Region 2
Region 3
Conservation Districts
State Parks
Water Resources
Water Planning
Natural Heritage

Nevada SAI # E1997-156 Project: DEIS -- Florida Canyon Mine

☒ Yes ☐ No Send more information on this project as it becomes available.

CLEARINGHOUSE NOTES:

Enclosed, for your review and comment, is a copy of the above mentioned project. Please evaluate it with respect to its effect on your plans and programs, the importance of its contribution to state and/or local areawide goals and objectives; and its accord with any applicable laws, orders or regulations with which you are familiar.

Please submit your comments no later than August 14, 1997. Use the space below for short comments. If significant comments are provided, please use agency letterhead and include the Nevada SAI number and comment due date for our reference. If you have any questions, please contact Terr Rodeler, Clearinghouse Environmental Advocate, at 687-6382, or Julie Butler, Clearinghouse Coordinator, at 687-6357.

THIS SECTION TO BE COMPLETED BY REVIEW AGENCY:

- ☐ No comment on this project
☐ Proposal supported as written
☐ Additional information below
- ☐ Conference desired (See below)
☒ Conditional support (See below)
☐ Disapproval (Explain below)

AGENCY COMMENTS:

9-1

We request that the proposed seed mixture on page 2-29 be modified if possible to maximize use of species native to the local area, consistent with adequate reclamation objectives. To the extent that persistent non-native species (which in this region includes *Penstemon palmeri*) are used, we request that the Final EIS document how each of the non-native species in the mix contributes to the overall reclamation objectives, and the efforts that were made to identify native alternatives that would meet those objectives. Where otherwise-desirable natives were not considered due primarily to limitations in cost or availability, please also document whether any cooperative efforts are planned by the Agency and/or Proponent that would help increase supplies and/or lower unit costs of those species for future projects, and whether contracting for on-site gathering of native seed prior to disturbance would provide a lower-cost alternative.

James D. Morefield
Signature

Natural Heritage
Agency

8/13/97
Date

Response to Letter 9

9-1 Comment noted. Please see the Response to Comment 3-6. As in Table 2-4, page 2-29 of the Draft EIS, *Penstemon palmeri* is listed as a forb native to Nevada. This is verified in the *Umla Basin Flora*, 1986, U.S. Forest Service and BLM, Ogden, Utah, and in the Nevada Plant List, U.S. Department of Agriculture, Soil Conservation Service, July 1991.

Letter 10

HOW MILLER
Consultant

STATE OF NEVADA



PETER G. MORRIS
Director

R. MICHAEL TURNER, P.E.
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

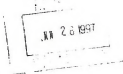
DIVISION OF WATER RESOURCES

123 W. Nye Lane, Suite 216

Carson City, Nevada 89706-0818

(702) 687-4390 • Fax (702) 687-6972

July 24, 1997



Nevada State Clearing House
Planning Division
Blasdel Building Room 200
Carson City, NV 89710

RE: Nevada SA/0 E1997-156

Project: DEIS -- Florida Canyon Mine

In response to the above project, the Division of Water Resources has the following comments:

- 10-1 1. Records in the office of the State Engineer show that the Florida Canyon Mine used about 445 million gallons in 1996. Chapter 2.2.9 of the DEIS estimates the water use for 1997 to be about 577 million gallons. Currently the mine has water right permits for approximately 787 million gallons annually. In addition, the mine has purchased up to 2,000 acre-feet (651 MGA) of surface water under a five year contract from the Pershing County Water District. If the surface water becomes unavailable, address the potential impact of pumping the entire duty of 787 million gallons annually from existing groundwater wells.
- 10-2 2. According to the DEIS, pit dewatering will be required. The maximum predicted drawdown at the pit would be 288 feet below premining water levels at the end of mining and dewatering in the year 2002. Maximum dewatering rates are estimated to be 370 gallons per minute. A dewatering permit will be required to remove water from the pit. Also, the disposition of water from dewatering the pit needs to be discussed.
- 10-3 3. Water diversions from any surface source must comply with the provisions of NRS 533. Water diversions from any underground source must comply with the provisions of NRS 533 and 534. Any ponds, dams, or diversion structures must comply with the provisions of NRS 535. If any structure impounds more than 20 acre-feet of water or has a dam height of 20 feet or higher, you will be required to obtain a dam permit pursuant to NRS 535.

Sincerely,
Tom Wilson
Tom Wilson
Staff Engineer II

Response to Letter 10

- 10-1 Impacts due to withdrawal of process water from the lower aquifer were not analyzed in this EIS because the permits for water withdrawal were authorized prior to the proposal for the Proposed Action. In addition, implementation of the Proposed Action is likely to lead to at least a 75 percent reduction in withdrawal from the lower aquifer due to use of surface water sources. Please refer to Response to Comment 5-9 for a discussion of the potential for impacts to the upper aquifer due to pumping of the lower aquifer.
- 10-2 Comment noted. Permits for pit dewatering via well PW-4 and the pit sump are currently in place. If additional wells are required for pit dewatering, FCMI would obtain additional permits from the Nevada Division of Water Resources. All water derived from dewatering of the pit would be used by FCMI as process water or for dust suppression.
- 10-3 Comment noted.

Letter 11

Response to Letter 11



BOB MILLER
Governor

STATE OF NEVADA
DEPARTMENT OF BUSINESS AND INDUSTRY
DIVISION OF MINERALS

400 W. King Street, Suite 105
Carson City, Nevada 89710

<http://www.state.nv.us/business/industry/mineral/mineral.htm>
(702) 687-5050 • Fax (702) 687-3957
August 12, 1997

LAS VEGAS BRANCH
2501 E. Sahara Avenue
Suite 205
Las Vegas, Nevada 89104
(702) 486-4343
Fax (702) 486-4345

CLAUDIA K. CORMIER
Director

RUSSELL A. FIELDS
Administrator

Julie Butler, Clearinghouse Coordinator
Department of Administration
Budget and Planning Division
Blasdel Bldg., Room 200
Carson City, NV 89703

Re: Nevada SAM E-1997-156: Draft Environmental Impact Statement (DEIS) -- Florida Canyon Mine Expansion, Florida Canyon Mining, Inc. -- Due Date: 8-14-97.

11-1

The Nevada Division of Minerals appreciates the opportunity to review the DEIS for the proposed expansion of the Florida Canyon Mine.

We are pleased that on-going exploration efforts have resulted in the discovery of additional ore reserves that will extend the life of the Florida Canyon Mine.

Expansion at this operation will be a significant benefit to Pershing and surrounding counties and a number of local communities in terms of enhanced and extended employment, tax base, and revenue generation opportunities.

11-2

In reviewing the section on reclamation of the open pit (Facility Reclamation - Section 2.2.15.8 on p. 2-30), it is noted that the pit will be bermed on the north, south, and west perimeters and the road leading to the east highwall will be bermed, as well. This is in conformance with the requirements set forth in NAC Chapter 513 for securing of abandoned mines. The Division also recommends posting of warning signs on the berms as an added public safety measure (per NAC Chapter 513.370). There is no "hard and fast" rule on the spacing of warning signs. Usually, signs placed approximately 100 to 200 feet apart will provide adequate coverage and warning for people who might venture into the area.

The Florida Canyon Mine expansion project has the full support of the Division.

Please contact Division staff at any time for additional information or assistance.

Sincerely,

Bill Durbin
Geologist

W:\mail\1110



Nevada Department of Business & Industry

Financial Services Team Licensing & Regulatory Services Team Natural Resources Services Team Consumer & Labor Services Team

11-1 Comment noted.

11-2 Comment noted. Text has been added to Section 2.2.15.8 of Reclamation under Open Pit (page 2-30), which describes the posting of warning signs. Please see Table 3-1.

Letter 12

BUM-NEPA MANAGER, KEN LODA
5100 E WINNEMUCCA BLVD.
WINNEMUCCA, NV 89445
AUGUST 14, 1997

Dear Mr. Loda:

Here are the Building Trades Council's comments on the Florida Canyon Mine DEIS. Enclosed are three pages of text of our comments, and six pages of text on the BCT's behalf, prepared by Dr. Myers, and another 3 pages of text prepared for the BCT By Ms. Kuntz.

Please send copies of the FEIS to the BCT's researcher:

JOHN WILLIAMS
12770 SW FOOTHILL DR.
PORTLAND ORE 97225

Yours,



John Williams
cc: Rich Houts

Letter 12 Continued

The Building and Construction Trades Council of Northern Nevada (BCT) offers the following comments regarding the draft Environmental Impact Statement (DEIS) for the proposed expansion of the Florida Canyon Mine.

The BCT is encouraged by the potential partial backfill of the open pit, and the verbal commitment by mine management to use all-native plant species during reclamation of the site.

12-1 But the DEIS did not provide sufficient analysis of the project's continued impacts on air quality, nor did the DEIS discuss adequately the implications of the mine's frequent releases of cyanide-bearing solution, and its non-compliance with air quality regulations.

12-2 NEPA regulations (40 CFR 1500-1508) and the BLM's NEPA handbook (H-1790-1) describe the necessary contents of a DEIS, including discussion of both the direct and indirect impacts of a project, identification of maximum levels of acceptable impact, and descriptions of any mitigation measures that could be implemented to avoid or reduce the project's impacts, even including measures which BLM may not have the resources and authority to implement.

This DEIS did not adequately describe certain direct impacts, and describe the range of available mitigation measures, and their effectiveness.

FAILURE TO DISCUSS FREQUENCY AND IMPACTS FROM CYANIDE SOLUTION RELEASES

This mine has had many releases of cyanide-bearing solution; some published accounts claim the mine has discharged cyanide solution on almost 20 occasions. As recently as December, 1996, over 5 0,000 gallons of cyanide bearing solution breached a pond at this mine, and flowed overland before its discovery. Only this most recent incident was even mentioned in the DEIS.

12-3 This history of cyanide releases, and their magnitude, location, and impacts, should have been included in the DEIS. These releases are evidence on the potential direct impacts of this project, especially the new features of the proposed action which will handle cyanide, such as the leach pad and the process piping. These releases also reflect on the direct impacts from the continued operation of the existing facilities, whose life is extended by the proposed action.

MISLEADING DEIS TEXT ON LIKELY SOURCE OF CYANIDE RELEASES

12-4 The DEIS contained misleading text on this subject of cyanide releases at the mine. The executive summary of issues mentioned the potential impacts of a cyanide release, and concluded a cyanide release was most likely during transport to the site. (P. VI, DEIS)¹

¹ This "response" estimated there would be .02 transportation related releases over the life of the project.

Response to Letter 12

12-1 Specific air quality comments are addressed below (Responses to Comments 12-5 through 12-9).

12-2 Comment noted. However, without a more specific description of potential impacts and possible mitigation, it is not possible to prepare a detailed response.

12-3 See Response to Comment 1-10.

12-4 Comment noted. See Response to Comment 1-10.

Letter 12 Continued

However, there have already been several process-related cyanide releases at the mine over the last few years, according to published accounts. This "response" never mentioned these occasions on which cyanide has been released during the operation of the mine's fluid storage and extraction process facilities.

- 12-4 Contrary to the DEIS' claims, cyanide releases are far more likely during the mine's operation than during materials transport, according to the mine's operating history. While the DEIS claims that the mine's diversion and containment structures, and emergency response plan, minimize the impacts of a process-related cyanide related release, the DEIS never informs its readers how these structures and response plan did -or didn't- function during the mine's prior releases of Cyanide bearing solutions.

FAILURE TO ADEQUATELY DISCUSS AIR QUALITY IMPACTS

This mine is a large source of airborne dust (PM-10) and has had compliance problems. The State has recently issued citations against the mine for violations of air quality regulations, for which the mine paid a fine. The federal Mine Safety agency has also cited the mine for dust-related violations.

- 12-5 These violations should have been discussed in the DEIS, since this information reflects on the direct impacts from the proposed action, and the potential effectiveness of proposed mitigation measures. Since one violation was for failure to treat an unpaved road to reduce its dust, the BCT suggests that paving of main mine haul roads be evaluated as a dust mitigation measure, since road treatment with water/chemicals is apparently not effective.

The mine's air pollution may increase as a result of the proposed action, because of the increased amount of disturbed area, and the operation of additional rock and ore hauling and handling operations, and new ore crushing and milling facilities.

- 12-6 One reason this impact is important is that the EPA has recently finished its review of over 80 health studies and concluded that fine dust is far more dangerous to human health than previously believed, and EPA is currently implementing new standards for a subset of this pollutant. The DEIS failed to mention this new air standard for fine dusts, and to discuss whether this mine will likely comply with the new standard.

The DEIS does contain "modeling" information that the proposed action will cause an increase in PM-10 of about 16.5 ug/M3 (Micrograms per cubic meter, DEIS p. 3-63). But the DEIS then claims the background level of PM-10 at the mine is 10.2 ug/M3. The DEIS not reconcile this claim of 10.2 ug/M3 with data contained in Table 3-15 in the DEIS, which shows that PM-10 levels at the mine before the implementation of the proposed action, already reach concentrations of 119 ug/M3 on a 24 hour average.

- 12-7 If the proposed action adds 16.5 ug/M3 to the occasional peaks of 119 ug/M3, then the Mine will on occasion cause concentrations of 135 ug/M3. This is close to a violation of the 24

Response to Letter 12

- 12-5 As part of the proposed project, a permit would be obtained from the Nevada Division of Environmental Protection (NDEP), Bureau of Air Quality, for disturbance exceeding 5 acres. As stipulated in the permit, fugitive dust must be controlled on all surface disturbance sites. FCMI would control fugitive dust emissions through appropriate site watering before and during disturbance activities in compliance with the surface disturbance permit. The air quality analysis for the Draft EIS did not identify any potential adverse air quality impacts from dust emissions that would necessitate paving the haul roads. The proposed methods of using water and/or chemicals to control dust are effective measures and are approved by both the U.S. Environmental Protection Agency (EPA) and the NDEP.

- 12-6 The new fine particulate standard, now approved by EPA, places additional restrictions on the allowable concentrations of particles smaller than 2.5 micrometers. The key element of the EPA's interim implementation policy for particulates is to insure that essential programs required under the Clean Air Act for attainment of existing air quality standards are to continue where it is appropriate to do so. The EPA will maintain the PM_{10} standard at the same ambient concentration levels now in existence while the new standard for fine particulates is implemented over the next two to five years. The EPA requires that the preconstruction review for particulates continue to involve only review of PM_{10} and their ambient impacts. The dust generated by mine processes, including fugitive dust, generally contains a greater fraction of larger particles, in the range 2.5 to 10 micrometers, rather than the fine particulates such as those smaller than 2.5 micrometers. This would suggest that the new annual standard for fine particulates of $15 \mu g/m^3$ would be less likely to be violated as a result of mining operations than the present PM_{10} standard of $50 \mu g/m^3$. It would also suggest that an exceedance of a short term 24-hour standard of $65 \mu g/m^3$ as proposed for fine particulates would be less likely to occur than an exceedance of the present PM_{10} standard which is $150 \mu g/m^3$. Fine particulates are often a result of secondary particle formation in an urban setting where gaseous forms of air pollution, such as nitrogen oxides and sulfur dioxide, change to particulate form due to chemical processes in the atmosphere. This facility is not expected to be a major source of gaseous emissions; therefore, it would not contribute significantly to the formation of secondary particulates.

Previous spills have been handled according to the protocols described in the SPCC plan and the Emergency Response Plan. No environmental damage has been documented as a result of previous spills. However, both plans have been modified to minimize the potential for future spills.

- 12-7 Results from air quality modeling with models approved for regulatory purposes by the EPA are designed to be conservative in nature. The present activities and the Proposed Action are shown by the model to result in a maximum 24-hour impact at the mine boundary of $16.5 \mu g/m^3$. When this value is added to the background level of $10.2 \mu g/m^3$ a predicted maximum value of $26.7 \mu g/m^3$ is obtained. The maximum impact from present and future activities should not be added to the monitored maximum value of $119 \mu g/m^3$ since the monitored value already contains the present impacts. Rather the monitored maximum is indicative of the highest daily concentrations to be expected at the present time. Monitoring is planned to continue in the future and will be used to assure compliance with ambient air quality standards. Dust levels on-site are not a strong indicator for potential levels at the boundary since concentrations decrease as the plume becomes dispersed. Modeling is used to determine the amount of dispersion that occurs and to predict the levels of the pollutant at the property boundary and beyond.

Letter 12 Continued

12-7

hour PM-10 standard of 150 ug/M3. Since air quality modeling is an inexact science, often with a large margin for error, predictions that 90% of a standard would be consumed are indicators that a standard could be exceeded on occasion. As further evidence that the mine's dust is a potentially significant impact, and its effects and potential mitigation deserves additional discussion, on-site tests at the mine have also revealed levels of dust at 460 ug/M3, which could indicate an exceedance of the air quality 24 hour standard of 150 ug/M3 at the property line.

12-8

Also, air quality impacts can be significant even if air quality standards are not violated. Many agencies and studies offer criteria of air pollution significance below the level of actual violations of standards. The EIS offered no authority from NEPA or BLM regulations to support a claim that any increase in air pollution short of an actual violation is non-significant and not worthy of discussion in a NEPA document.

In contrast, many recent studies demonstrate that even a 10 ug/M3 increase in PM-10 levels can cause an increase in the hospital admissions rate and the death rate among the exposed population. Since this mine's latest action will increase PM-10 levels by 16.5 ug/M3, and this increase can cause health impacts on the exposed population, this impacts of this increase should have been discussed in the DEIS, even if the air standard is not violated.

12-9

Another reason why the mine's current and future air quality impacts are suitable for additional discussion, is that the mine's emissions include many highly toxic substances, that are capable of affecting human health and safety in a way that NEPA defines as significant at 40 CFR 1508.27 (2)

Air quality testing at the Mine recently has detected elevated levels of dust which includes airborne silica, (fine quartz dust) which is a suspected carcinogen and which is known to cause severe lung ailments. This dust is similar to tiny particles of broken glass that scars the lungs of persons exposed to it at elevated levels. The mine has apparently violated the legal limits for on-site concentrations of airborne silica dust.

High levels of airborne mercury fumes have also been detected near the Mine's mill and reagent areas. The presence of, and impacts from, these dangerous air pollutants at the mine, which may be increased and whose generation may be extended by the proposed action, are not mentioned in the DEIS. These impacts should be discussed in an supplemental EIS.

Please also see the BCT's attached comments from Dr. Myers on water resources, and Ms. Kuntz on wildlife habitat.

Response to Letter 12

12-8 Predicted air impacts are well below ambient air quality standards (less than 20 percent of the 24-hour standard) and the predicted value of 16.5 $\mu\text{g}/\text{m}^3$ includes total impacts from present activities as well as the increase due to the proposed project. The USEPA and the NDEP are responsible for establishing ambient air quality standards. These standards are set to protect both human health (primary) and the environment (secondary). The BLM does not have the authority to review or modify air quality standards.

12-9 Emissions to the atmosphere of toxic substances, including mercury, are evaluated during the air permitting process and were found to be below regulatory thresholds by the NDEP. In addition, silica is no longer listed as a regulated ambient air contaminant in the Nevada Air Regulations.

Letter 13

Discussion of Water Resources Impacts

Florida Canyon Mine Mine Expansion and Comprehensive Reclamation Plan Draft Environmental Impact Statement¹

Tom Myers, Ph.D.

Prepared for:

Northern Nevada Building Trades Council

This project represents the expansion of an existing mine. Proponents would expand the area and deepen an existing pit. They would also partially backfill the pit to above its groundwater level. This report discusses impacts of the project on ground- and surface water resources in the project area.

Groundwater Resources

13-1 The DEIS provides an incomplete discussion of the impacts on groundwater flow in the area. The discussion of groundwater modeling is limited to one small section regarding dewatering². When discussing groundwater modeling, the document should provide a summary of modeling assumptions including boundary and initial conditions, a discussion of calibration and verification, and a summary of water balance calculations. The discussion only states that "[t]yp[ic]al parameters included recharge...and hydraulic characteristics...for the alluvium and Grass Valley formations"³. There is no discussion of how these were determined or, with the exception of one pump test per strata⁴, even what the values are. Were these pump test results used in the model? The aquifers are unconfined, what value of hydraulic conductivity were used? Did the model consider the confined layer in the alluvium? The discussion should include sufficient figures to allow the reader to evaluate the model. The maps of the results, however, are quite adequate to assess predicted levels if they are accurate. But these maps should state which model layer they represent.

¹ Hereinafter referred to as DEIS.

² DEIS, Pit Dewatering subsection, page 3-45,46.

³ Id.

⁴ DEIS, page 3-32, bedrock has transmissivity of 430 gpd/ft; page 3-34, alluvium has a transmissivity of 550 gpd/ft.

Response to Letter 13

13-1 Comment noted. Please refer to Response to Comment 1-3.

Letter 13 Continued

Response to Letter 13

13-1 In the past on other DEISs, I have been told that the discussion concerning groundwater flow is so abbreviated because there will be a complete separate hydrologic report available for review. My request herein is to increase the DEIS discussion by several pages, or to reach some middle ground between the inadequate, cursory discussions in DEISs and very thick technical documents. The brief discussion provided here suggests that this concern was totally neglected.

13-2 There is not an adequate description of dewatering for the pit. I did not locate a discussion in Chapter 2, the description of the proposed action, of the dewatering system. The discussion was also out in the sub-section labeled Pit Dewatering. Instead, a description of dewatering was found under Groundwater Quality⁶ which suggests that inflow is pumped from a small lake at the pit bottom. It appears from maps that production well PW4 in the center of the pit pumps water from a lake in the middle of the pit⁷. If this is true, how was the dewatering modeled? Contours on Map 3-11 in the DEIS show drawdown to be maximum at a point near the center. Figure 2-2 shows pre-mining water levels near 4430 and the west end of the pit to be excavated to below 4150. However, the predicted water levels at the end of mining, Map 3-12, show levels to vary from less than 4200 to more than 4300. The cross-section shows a relatively flat surface at near 4150 while Map 3-12 shows a cone rising well above the bottom of the pit. It appears that groundwater levels in Map 3-12 are in the air above the bottom of the pit. This raises serious questions about the adequacy of the modeling and the predicted dewatering rate value. The drawdown cone should show contours that are no higher than the elevation of the base of the cliffs.

13-3 The amount of water intersecting the pit in predevelopment conditions can be estimated with Darcy's law. This will allow an independent assessment of the quality of the groundwater analysis. The groundwater flow gradient off of the mountains to the east is 0.035 ft/ft⁸. Geologic sections indicate the aquifers are unconfined and the flow is from the bedrock to the alluvium⁹. Gradient decreases in the alluvium because hydraulic conductivity increases. Using $T=430$ gpd/ft²=57.5 ft²/d, v is

$$Q = v_i = WDKi = WTi = 5500 \text{ ft} \times 57.5 \text{ ft}^2/\text{d} \times 0.035 \text{ ft}/\text{ft} = 11,000 \text{ ft}^3/\text{day}$$

This assumes the transmissivity value applies to an aquifer the thickness of the pit and the width is the width of the pit (about 5500 ft). This value represents flow conditions through the pit before

⁶DEIS, page 3-37.

⁷For example, the map of drawdown at the end of mining, Map 3-11 in the DEIS, appears to have maximum drawdown in the center of the pit

⁸DEIS, Map 3-9 and Figure 3-4.

⁹Id.

13-2 FCMi currently dewateres the pit by pumping directly from the pit lake and by pumping from PW #4 which was installed to dewater the pit prior to mining operations. As the pit is deepened and widened PW #4 would be removed by mining operations and new dewatering wells installed to lower the groundwater surface below active mining. FCMi anticipates using horizontal wells within the alluvial wall of the pit to lower groundwater levels within the alluvium. The current pit lake would be pumped dry and a sump maintained during operations to remove additional water.

Dewatering from the pit was modeled using the MODFLOW drain package, in which the drain elevation was specified every stress period (month), and the leakage term was set to an arbitrarily high value to force complete drainage of the cells containing the sump pumps and dewatering wells. The drain elevation in the pit was lowered through time as the lowest bench elevation is lowered. Groundwater contours are estimated to be below the base of the pit sidewalls.

The comments relating to model implementation of dewatering and pit sidewall elevation versus water elevation are lengthy and somewhat unclear. The maximum drawdown shown on Map 3-11 of the Draft EIS may appear to be a point, but actually is 250 feet wide east-west and 500 feet long north-south; this is the planned size of the lowest bench at elevation 4,140 feet. Because the model cells are 250 feet square, the lowest bench is simulated by only two cells, and the graphical accuracy of the contour lines is limited. The hydraulic gradients radiating around this lowest bench are less than the pit high wall gradients, thus the model predicted water levels are below the land surface. Hence, the model is believed to be adequate for predicting impacts from the Proposed Action. Please refer to Response to Comment 1-4.

13-3 Please refer to Responses to Comments 1-3 and 1-4. Your discussion using Darcy's equation is accurate, but the simple constant gradient-length approach does not realistically represent the radial flow field with converging stream lines that surrounds the pit. The model is able to integrate all the distance and variable gradients dynamically during runtime, whereas a simple application of Darcy's law cannot do this. The fact that your predicted inflow rate (250 gpm) is within a factor of about 1.5 of the MODFLOW predicted inflow rate (370 gpm) is itself confirmation of the model prediction. Conservative assumptions were used in the MODFLOW model to ensure that the final prediction does not underestimate the actual pit inflow rate. It is very likely that the actual pit inflow rate will be less than 370 gpm (based on monthly averaging), and that dewatering impacts will be less than estimated in the modeling report (BAI 1997).

mining and drawdown. This estimate is similar to the estimate for flow through the pit provided, without documentation, in the DEIS⁹. With drawdown, the gradient near the pit increases substantially such that water at elevation 4550 is drawn down to about 4150 in one half mile (compare Figure 3-4 and Map 3-9¹⁰) which is a gradient of about 0.1515 ft/ft. The estimated water intersecting the pit becomes 47,900 ft³/day which is only about 250 gpm. This suggests the model overestimated the dewatering requirements.

The amount dewatered depends on local recharge in the mountains to the east rather than regional flow, so the amount intercepted by the pit is likely to be small. Much of the flow would be recharge from the Florida Canyon drainage which appears to be about 2 sections¹¹ or 1280 acres. The top of this drainage may be close to the 20 inch precipitation zone, the bottom is probably less than 10 inches. Based on the Maxey Eakin recharge method, the average recharge would be no more than 2 inches, which when spread over 1280 acres yields about 213 afy which is about 25,000 ft³/d or 130 gpm. This also suggests that the model overestimated dewatering requirements.

However, drawing the water table down by over 250 feet would increase the effective width of the "capture zone"¹². Therefore, the calculations above probably underestimate dewatering requirements and represent only the pre-mining conditions. The maps do not suggest much of a widened capture zone however.

By suggesting that the model overestimated dewatering, I am not suggesting that the DEIS underestimated impacts. As mentioned, groundwater levels appear to be above the base of the pit side walls. This suggests the model used a single well in the center of the pit to simulate dewatering rather than modeling the pit as a constant head boundary that lowers with time as the pit lowers. Such a boundary would have forced the groundwater contours to the base of the pit sidewalls¹³. Because it would have forced the contours to lower all around the pit, a gradient toward the pit would have been established in the model. This would include an increased gradient toward the pit from the north and south thereby increasing the capture zone. This would expand the drawdown cone around the pit and may actually cause the cone to extend outside of the permit boundaries. However, the well analogy may overestimate dewatering because it causes drawdown to be below the pit at the center. In other words, it appears that levels near PW4 are below the pit bottom; the gradient near this well would have been steeper than at the base of the

⁹DEIS, page 3-45.

¹⁰Although, if the modeling is inadequate, the gradients predicted from these figures will be even greater.

¹¹ DEIS, Map 3-8.

¹² A capture zone is the effective area from which a well, or in this case, an open pit intercepts the flow.

¹³Typically, projects desire to keep the sidewalls dry for stability concerns.

Letter 13 Continued

Response to Letter 13

- 13-3 pit sidewalls. Improved modeling may decrease dewatering estimates but increase the extent of the drawdown cone.

13-4 The groundwater discussion does not mention whether production pumping is included in the model. "The mine currently uses groundwater to supply the annual production water usage of approximately 500 to 600 million gallons¹⁴. This is more than twice the predicted dewatering rate. This does not appear to be included in the model. But, the document does not discuss whether the confined layer in which production occurs was included in the model. Or is this to be replaced with surface water? If so, why? What will the projected dewatering discharge be used for? How will it be discharged if not used in mining and milling operations?

13-5 Existing groundwater levels may be incorrect. This is important because they are apparently used for calibration of the groundwater model¹⁵. There are no wells in the mountains east of the mine, yet Figure 3-4 shows an extrapolated water surface through the mountains. This extrapolation is based merely on the one well in bedrock, PW4. This is important because the statement that "steady state water levels and drawdown contours lie at lower elevation (sic) than the groundwater emerging as spring in the canyons" justifies the conclusion that drawdown will not affect springs in the mountains. If there are no observation wells in the mountains, how is it possible to be certain that no connection exists between groundwater in Florida Canyon and the bedrock that intersects the pit?

13-6 If the groundwater levels do intersect the side of the pit, as suggested above, there will be a large seepage face. Has the mine analyzed the geotechnical implications of this seepage face, if it exists?

13-7 Regional Groundwater: Map 3-8 shows the groundwater depth and flow patterns for the Inlay hydrographic area. Flow is toward the river from both sides. Only in the upstream portion does the map show a level of ten feet near the river. With flow toward the river on both sides, there must be a connection with the groundwater. With Rye Patch Reservoir, there has long been a substantial source of recharge which should have raised groundwater levels and caused a connection to occur between the river and the groundwater. This map appears to be in error or is based only on wells that are not close enough to the river to adequately show the level.

13-8 Partial Pit Backfill: The pit will be partially backfilled to above the preexisting groundwater level. This will prevent the formation of a pit lake. Had backfilling not occurred, there would have been a deficit created and the pit would have drawn water in for a long time and created small, but measurable differences in Humboldt River flow during baseflow. This is especially important at a time when the Humboldt River may exhibit decreased flows due to pit

13-4 The lower aquifer from which production water is withdrawn by the mine was not included in the groundwater modeling for the Draft EIS. This is because pit excavation and dewatering would only occur within the upper aquifer and water level data taken in the upper aquifer during pumping of the lower aquifer indicates no significant hydraulic communication between the two aquifers. All dewatering discharge would be used as process water or for dust suppression.

13-5 The groundwater model was calibrated to observed groundwater elevations within the existing monitoring well network. You are correct in noting that there is limited water level data in the bedrock east of the mine. As stated on page 3-34 of the Draft EIS, FCM1 will place a well upgradient of the pit (east) to confirm the groundwater levels in that area. For the purposes of modeling for the Draft EIS, an estimate of groundwater levels in the bedrock was obtained by running the model with a known recharge rate (see Response to Comment 1-3) and known transmissivity until steady state was obtained. These levels are shown in Map 3-10.

Field observations within the upper reaches of Florida Canyon and Humboldt Canyon revealed that spring flow occurred on bedrock composed of the Rochester Rhyolite at elevations well above the mine operation (see page 3-27 of the Draft EIS). The flow rapidly infiltrated the colluvium and Prida Limestone which outcrops to the west of the Rochester Rhyolite. If the spring flow was not perched above the regional groundwater surface the flow would have continued down Florida Canyon. The fact that the flow infiltrated rapidly provides direct evidence that the springs are most likely perched.

13-6 The mine intends to dewater the alluvial wall of the pit using horizontal wells to ensure that a seepage face does not form. Please refer to Response to Comment 13-2.

13-7 The BLM agrees that there is a connection between the Humboldt River and groundwater. Map 3-8 is based upon previous work by others in the area and is presented to provide a general understanding of regional groundwater flow. The 10-foot groundwater depth contour was likely not shown on Map 3-8 because the steep slopes adjacent to Rye Patch Reservoir would have resulted in placement of the contour line too close to the edge of the reservoir to be distinguished from the reservoir boundary. For the purposes of this EIS analysis the lack of a 10-foot contour in the vicinity of Rye Patch Reservoir is not taken to indicate that there is no connection between the river and groundwater. In fact, the discussion on page 3-32 of the Draft EIS discusses the likely variability of interaction between the river and groundwater.

13-8 Comment noted.

¹⁴DEIS, page 3-29.

¹⁵ This is based on the simulated steady state groundwater levels in Map 3-10. Typically, a model is calibrated by adjusting parameters to match some steady state condition. But, there is no discussion of calibration.

Letter 13 Continued

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13-8 refilling due to mines further upstream. Also, there would have been a perpetual evaporative loss from a pit lake which would have decreased the groundwater flow to the river. The pit lake appears to have been several hundred acres, so the evaporation could have eliminated much of the flow. The groundwater flow to the river from the West Humboldt Mountains was estimated as 1800 af/year by the modelers herein and 1000 af/year by Eakin¹⁶.

13-9 However, backfilling is not without problems. It will have much higher conductivity than the previous rock. This will serve as a preferential flow zone and cause permanent diversion of flow in the area. I am concerned about the impacts to flow levels and amounts around the backfilled pit. Depending on compaction (which I did not see a discussion of), the hydraulic conductivity could be much higher than the surrounding rock. High conductivity backfill intercepting a bedrock aquifer could provide a sink into which the aquifer will discharge causing problems further away than imagined in this DEIS. There is no analysis of post backfill flow or of this impact in the DEIS.

13-10 The channel for Florida Canyon, after dropping into the pit area, will be constructed across the backfill. The DEIS says the channel will be ripped through the backfill. Flows are likely to infiltrate into the highly permeable backfill. While the DEIS does not include an adequate discussion of the volume of flows in Florida Canyon, it is likely that the 100-year event will result in at least 100 af of runoff into the pit (see discussion below). Rainfall directly onto the pit will likely be completely infiltrated. Thus, at least several hundred af of water may infiltrate into the backfill in slugs. (Note that this could be much more if our estimate of drainage area in Florida Canyon is low or if there is substantial impermeable pit wall drainage into the site as well.) Lower return interval storms will cause lesser amounts of runoff volume. During most substantial rains, there would at least be infiltration of direct rainfall. If porosity of the backfill is 0.2 (for example, since there is no discussion in the DEIS), for each foot of infiltration there will be five feet of temporarily saturated backfill. This causes quality problems as it increases the amount of wetting and drying which increases the opportunity for leaching and reactivity within the backfill. The slugs of water increase the groundwater level in the backfill which will increase the gradient out of the pit leading the potential reactants downstream toward the Humboldt River.

13-11 Waste Rock Dumps: The DEIS estimates seepage from under the waste rock dumps to be negligible¹⁷ based on various models and assumptions. Nowhere in the document is there a description of the size of material in the dumps. Nor does the document describe the parameters used in the models. There is no discussion of the distribution of hydraulic properties likely to be found in the dump. In other words, models use parameters, for example, hydraulic conductivity, that represent an average over an area. They model an average flow rate. A waste rock dump,

13-9 Please refer to Response to Comment 1-5

13-10 Please refer to Response to Comment 1-6.

13-11 Details of the waste rock seepage modeling are provided in the following public document available for review at the BLM Field Office in Winnemucca, Nevada:

Shepherd Miller, Inc. 1997. *Geochemical and Hydrologic Investigation of Waste Rock, Florida Canyon Mine, Winnemucca, Nevada*. Prepared for Pegasus Gold Corporation, Florida Canyon Mining, Inc. P.O. Box 350, Imlay, Nevada. April 1997.

For additional discussion of seepage quality from the waste rock dumps please refer to Responses to Comments 6-5 through 6-10.

¹⁶ Eakin, T. E., 1962. Ground-water Appraisal of the Imlay Area, Humboldt River Basin, Pershing County, Nevada. In *Ground-water Resources - Reconnaissance Series Report 5*, Nevada Department of Conservation and Natural Resources, 47 p.

¹⁷ DEIS, page 3-43

Letter 13 Continued

- 13-11 because of the presence of variably sized material, will have preferential flow paths. Some water will flow much faster than predicted. The DEIS should account for this because the flow is potentially a source of contamination.

Surface Water Resources

- 13-12 The flood hydrology section¹⁸ is incomplete. At a minimum, the methodology used, presumably TR55, should be discussed and parameters presented in a table. The parameters should include drainage area, curve number, antecedent condition, slope, time of concentration, and rainfall type curve. The results table should include the volume of runoff. Peak flow is fine for the design of a flood channel. But the results of this modeling include runoff into the backfilled open pit and into sediment ponds where peak flows are not important but the total runoff is important (see discussion above about infiltration).

- 13-13 Also, there is no discussion of sediment movement from the watersheds. This project intercepts flow from three watersheds. The sediment yield should be calculated and provision to handle it discussed. I presume that sediment is important because there was at least one pond, presumably from previous expansions.

- 13-14 There is no discussion of a wetland inventory. There are ephemeral channels listed as waters of the United States. Is there any riparian vegetation in these channels? This would indicate the presence of groundwater and possibly hydric soils and wetland conditions. There is mention of an area up on Florida Canyon with riparian vegetation. What will be the effect of the groundwater drawdown on this resource?

Conclusion

The pit below the water table will be backfilled and this will decrease, but not eliminate, the impacts. It is essential that the FEIS improve the amount of information about water resources provided.

¹⁸DEIS, page 3-27.

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- 13-12 Modeling of flood hydrology at FCMI is detailed in the following public document, available for review at the BLM Field Office in Winnemucca, Nevada:

Hansen, Allen & Luce Environmental, Inc., 1996. Florida Canyon Mining, Inc., Waste Dump Diversions and Sediment Ponds, August 1996.

This report describes in detail the modeling methodology used (USCOE HEC-1 watershed model), diversion channel sizing, sediment pond volume calculations, and riprap design. All parameters necessary for these calculations are included in this document.

- 13-13 Please see Section 2.2.8, Storm Water Control, and 2.2.9, Water Supply (page 2-15) in the Draft EIS, for a discussion of existing and proposed sediment ponds and other erosion controls. Sediment ponds have been designed to accommodate projected sediment transport and collection associated with the proposed project, as well as to satisfy state permitting requirements. Further information on sediment pond design may be found in the following report available for review at the BLM Field Office in Winnemucca, Nevada:

Hansen, Allen & Luce Environmental, Inc., 1996. Florida Canyon Mining, Inc., Waste Dump Diversions and Sediment Ponds, August 1996.

- 13-14 See Section 3.3.1.2 of Water Resources and Geochemistry (page 3-29), for details regarding the Waters of the U.S. assessment, which includes a wetlands inventory, conducted in the project area and vicinity. Riparian and wetland vegetation is not present in the project area as stated in Section 3.6.2.1 of Vegetation Resources (page 3-79). Also, please see Response to Comment 6-3 regarding springs in the project vicinity (Florida Canyon and Humboldt Canyon).

Letter 14

Discussion of Wildlife Resources Impacts

Florida Canyon Mine Mine Expansion and Comprehensive Reclamation Draft Environmental Impact Statement¹

Wendy A. Kuntz

Prepared for: Northern Nevada Building and Trades Council

The proposed action represents the expansion of an existing mine and much of the information provided in the DEIS originates from the original mine EIS and supporting documents. There were several impacts and mitigation procedures that were not properly addressed.

Insufficient Documentation of Potentially Impacted Species.

14-1 The DEIS refers several times to Appendix D for species presence or absence. Appendix D, however, is clearly labeled "Wildlife Species Potentially Present in the Vicinity of the Florida Canyon Mine." This appendix could have been drafted from published literature and does not represent the actual species lists compiled from wildlife inventories conducted at the project area. There is little documentation about the results of wildlife surveys, and/or the types of survey methods used or the time of year the surveys were conducted. While there are references to the consultant reports as baseline surveys (Western Resource Development Corporation 1985, Resource Concepts 1994, BLM 1995, SWCA 1996c, 1996d)² there is no reporting of the actual results of these surveys. While not all of the information from consultant reports may not be pertinent to the DEIS, since these documents are difficult for the public to obtain and read critically, the DEIS should include basic information about the types of plants and wildlife found during inventory survey work, the survey methods, and the time of year the surveys were conducted.

Avian Impacts; Including Neotropical Migrants

14-2 No provision is made in the DEIS for eliminating or reducing the impact of the Proposed Action on the resident and migratory bird species which breed in the project area. Appendix D of the DEIS lists 74 species of migrant or resident avian species which could potentially be affected by activity in the project area. Several of these species are neotropical migrants, which have become species of concern in many areas around the country. Neotropical migrants breed in North America and winter in South and Central America. Breeding birds are especially vulnerable to the clearing or disturbance of

¹ Hereinafter referred to as DEIS.

² DEIS, Wildlife and Fisheries Resources Section, page 3-81

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- 14-1 An EIS under NEPA is a disclosure document of important issues and concerns that may result from implementation of the Proposed Action or alternatives. An EIS is not an exhaustive report of all animal and plant species that occur in a given area or region. Appendix D presents a representative species list for the project area in order to characterize the overall habitat types present and general species' use of these habitats. It was never intended to be a complete species list. It is believed that detailed species lists do not provide important tools in the decision-making process of an EIS. The species addressed in this EIS were identified through a structured and formal process by the Federal, state, and local agencies and organizations that provided input and comments on this project. It is the BLM's intent to address prominent issues and potentially adverse effects from the Proposed Action, which may range from qualitative fragmentation and displacement issues to more quantitative concerns with specific habitat issues over both the short- and long-term. Refer to Response to Comment 1-9, regarding the baseline studies conducted to date for the vicinity of the Florida Canyon Mine. As indicated, all of these studies are available for public review through the BLM. It is not feasible nor practical to include the specifics from these studies, as they are not pertinent to the ultimate objective of the EIS analysis. Any elements from these studies important to the analysis were included in the EIS.

Letter 14 Continued

Response to Letter 14

vegetation during the nesting season (May 1 to July 31).

The DEIS specifically acknowledges that the destruction of the nests or eggs of migratory species is a violation of the Migratory Bird Treaty Act (MBTA)³, and yet there is no provision made in the DEIS to mitigate the impact of vegetation disturbance. A standard mitigation technique is to prohibit the removal or disturbance of vegetation during the breeding season. This mitigation has been mentioned in the LJ Ridge Modification Project (Placer Dome, U.S., Inc.) Decision of Record issued in April 1997.⁴ It is important to caution that locating and avoiding nesting birds prior to construction is incredibly difficult, even when a trained ornithologist is present. The very nature of breeding birds is often secretive and nests are cryptic. It is for this reason that the only way to insure that breeding bird nests will not be destroyed and compliance with the MBTA is to prohibit all disturbance of vegetation during the breeding season.

The DEIS did acknowledge that construction disturbance could disrupt breeding in raptors and specifically addresses this issue in section 3.7.4 Potential Mitigation and Monitoring⁵. However it proposes that "moving the nest site or erecting nest platforms" is a suitable mitigation procedure. Attempting to "move" a nest site is risky and most likely an ineffective solution, especially since the DEIS cites no references to this procedure. Establishing a buffer zone and avoiding the area during the nesting season presents a much more realistic mitigation and one more in line with the MBTA.

Bat Species

The DEIS acknowledges that several bat species potentially occur in the project area and that two species listed by the BLM as species of special concern, the Townsend's big-eared bat and the small-footed myotis, have been documented as occurring in the project area.⁶ Whether there are potential roost sites on the proposed action area is unclear. The DEIS on page 3-94 states that "potential roost sites occur within the abandoned shafts and adits that occur in the proposed mine exploration area," but later states on page 3-97 that "the proposed expansion activities in the immediate mine area would not directly impact existing shafts and adits that may support roosting bats." The map of Survey Results for Bat Species and Potential Roost Sites⁷ does not show the location of shafts or adits in the project area. In addition, no surveys for bats were taken in the large southern portion of the proposed project area. Since the location of

14-2 FCMH has the option to either clear native vegetation outside of the breeding season or conduct breeding bird surveys prior to mine expansion activities. Refer to Responses to Comments 1-7 and 3-10, regarding the additional protection measure developed for the project to prevent "take" under the Migratory Bird Treaty Act. Please note the reference to FCMH coordinating with the BLM to implement applicable survey methodologies and protection measures, to facilitate both the survey procedures and result reporting.

14-3 Mitigation Measure 2 in the Draft EIS for wildlife resources was developed to directly protect nesting raptors, in the event that either an occupied territory or active nest site were to occur within an area proposed for disturbance. Note that this measure indicates that FCMH would coordinate with the agencies on the appropriate protection or avoidance measures, depending on the variables mentioned. Moving a nest site and/or constructing artificial nest structures are suggestions for possible protection of an occupied territory. This would not be a feasible option once a nest becomes active, and these measures were not intended to be the priority for mitigation. The comment is correct in that avoidance is the best measure for nest protection. However, the comment is incorrect in that this has not been a proven procedure for raptors. The development of artificial nest structures has been successfully implemented in Utah, Wyoming, Colorado, and now Nevada. The Homestake Mining Company, in conjunction with the BLM and NDOW, constructed artificial nest structures for ferruginous hawks in 1996 for their Ruby Hill Project near Eureka, Nevada. Two of the three territories were subsequently occupied, and seven young fledged during the 1997 breeding season. Although this procedure would not be considered the primary measure for protecting raptors, it can be applicable under certain conditions. Regarding the citation comment, it was not appropriate for the Draft EIS to cite specific sources or references on this approach, since it is currently unknown what procedures would be more suitable, if warranted.

³ DEIS, Wildlife and Fisheries Resources Section, page 3-85 reads: "Loss of or disturbance to an active nest site could adversely affect breeding birds, potentially resulting in nest abandonment loss of the territory, and loss of productivity for that breeding season, which would be in violation of the Migratory Bird Treaty Act." I would add that physical destruction of nests, eggs, or young resulting from disturbance of vegetation or construction also violates the MBTA.

⁴ BLM 1997. Environmental Assessment, Placer Dome U.S., Inc., Bald Mountain Mine, LJ Ridge Modification Project, White Pine County, NV.

⁵ DEIS page 3-89.

⁶ SWCA 1996d as referenced in the DEIS, Special Status Species Section, page 3-97.

⁷ DEIS map 3-21.

Letter 14 Continued

- 14-4 shafts/adits was not given, it is impossible to determine if this area does not contain potential habitat for bats, or was simply not surveyed.
- Bats are most vulnerable to disturbance during lactation and hibernation. Disturbance during these times can result in death of juveniles or hibernating adults. Capping or destruction of shafts or adits can trap or kill roosting bats. Mitigation should include that all shafts and adits are surveyed prior to construction, demolition, or disturbance. If bats are found, then the Nevada Department of Wildlife should be contacted for proper bat exclusion methods. However, Bats should only be excluded during months that exclude lactation and hibernation.

Disturbance of Vegetation

- 14-5 The proposed action will disturb 860 acres of vegetation including 535 acres of shadscale vegetation and 325 acres of sagebrush vegetation.⁸ While restoration will replace some of this lost habitat, it is estimated that mature shrubs will take approximately 15 to 20 years to reestablish.⁹ The North Extension of the Heap Leach Pad Alternative would disturb 143 acres less than the proposed alternative. The feasibility of this alternative and its impact on wildlife and vegetation resources should be more closely examined. Since the proposed action represents the expansion of an existing mine¹⁰, one that has already undergone similar expansions, every attempt should be made to reduce the incremental addition of acres of disturbance whenever possible.

⁸DEIS page 3-79

⁹IBID

¹⁰Existing mine encompasses 1,259 acres of disturbance. DEIS Table 2-1, page 2-4

Response to Letter 14

- 14-4 Please review the entire impact analysis for bat species. On page 3-97 of the Draft EIS, the text states that no direct impacts to bats within the immediate mine area would be anticipated, since no underground workings occur in this area. The analysis follows with, "However, the planned exploration activities associated with the proposed project may directly or indirectly affect some of the historical underground workings, based on the location of these features relative to exploration routes, as shown in Map 3-21" of the Draft EIS. The analysis continues with a detailed explanation of how these impacts could occur to concentration areas, including hibernacula and maternity roosts. The map in the Draft EIS does not show specific underground workings, since it was irrelevant to the analysis. The analysis was based on the fact that certain workings could support roosting bats, and others would not. Note that all of the workings known to occur within the proposed disturbance area were surveyed, including the southern portion of the project area, as discussed in detail on pages 3-93 and 3-94 of the Draft EIS. Finally, note the Mitigation Measure 2 for sensitive species in Section 3.8.4 of Special Status Species in the Draft EIS. This measure details the protection measures that would be implemented for sensitive bat species. As stated in this measure, a variety of protection measures could be required, including additional surveys to determine potential roosting sites within the project vicinity, if warranted by the governing agencies. The BLM feels that the issue and concerns for sensitive bat species are adequately addressed for the proposed project and would prevent both direct and indirect impacts to potential bat roosts, if present.
- 14-5 Comment noted. The BLM's rationale for selecting the Proposed Action as the agency-preferred alternative is provided in Section 1.5, Agency-Preferred Alternative.

3.0 MODIFICATIONS AND CORRECTIONS

Table 3-1
Modifications and Corrections

Page	Paragraph	Line	Is:	Should Be:
v	12	18	One unevaluated site could be directly impacted (CrNV-02-3344).	Deleted
2-10	4	1		Add: Construction of the crusher facility would result in the disturbance of approximately 35 acres (Map 2-2). Components in the facility would include a grizzly and apron feeder, primary and secondary crushers, screens, conveyors, and lime and cement silos.
2-10	5	4	...approximately 64 million tons...	...approximately 55 million tons...
2-12	3	1	Five-foot high berms,...	Three-foot high berms,...
2-19	4	5	Information and permits pertaining to the management of hazardous materials use and storage are provided in Table 2-3.	Information on the management, use, and storage of hazardous materials is provided in Table 2-3.
2-22	6	4	...annually.	Add: An upgradient well would be placed east of the Phase 4 pit to confirm gradient and water quality within the bedrock.

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
2-25	6			Add: • If construction activities were to occur within the avian breeding season (April through July), breeding bird surveys would be conducted in native habitats located within the proposed disturbance areas prior to the initiation of disturbance. The survey methodology would coincide with BLM's standard breeding bird presence/absence surveys within the appropriate habitats. Breeding activities would be confirmed, based on territorial defense, breeding or feeding displays, and the presence of eggs or young. FCMI would coordinate with the BLM, regarding specific protection measures, in the event that occupied territories or active nest sites were found during these pre-construction surveys. Applicable protection measures could range from avoidance to no action, depending on species involved (e.g., loggerhead shrike vs. house sparrow), topographical shielding from indirect effects (e.g., noise), and breeding phenology to avoid potential "take" under the Migratory Bird Treaty Act. If vegetation removal were planned outside of the breeding season (i.e., August through March), no breeding bird surveys would be required, and development could proceed during this period. • FCMI would monitor the heap leach facilities for potential pooling of cyanide solution. In the event that pooling results from the cyanide application, FCMI would prevent wildlife access with the use of net panels.
2-26	6	22	Nevada Revised Statute [NRS] 519A	Deleted

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
2-30	9	8		Add: Warning signs would be posted on the berms as an added public safety measure.
2-32	Footnote 1		Crusher A...	A crusher...
2-34	1	3	These modifications would be incorporated into an updated closure plan which would be submitted to the NDEP (pursuant to the NAC 445A.446-7) at least 2 years prior to the anticipated permanent closure of the process component.	These modifications would be incorporated into a revised heap neutralization plan, which would be submitted to the BLM and NDEP approximately 2 years prior to final rinsing of each heap.
		5	...NAC 519A.345.	...BLM policy and NAC 519A.345.
2-39	Footnote 1		Crusher A...	A crusher...
3-19	4	4	...172 samples...	...143 useable samples...
	5	8	Additional samples	Seventy-four additional samples
	5	10	...208 samples representing waste rock at the mine.	...236 useable samples.
	6	5	...existing and proposed waste rock...	...existing waste rock and proposed ore and waste rock...
	6	13	...for waste rock...	...for ore and waste rock...
3-20	Table 3-4	3, column 2	208	236
		3, column 3	150... 63...	143... 93...
		4, column 2	52	49

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
3-20	Table 3-4	4, column 3	...213...	...236...
3-21	P*	2	...result.	Add: The third laboratory did not determine pyritic sulfur values for the analyzed samples.
	1	1	...208...	...236...
	2	2	...214...	...236...
	2	6	...52...	...49...
3-24	1	1	Three of the 52 samples submitted for re-analysis (see above section on Static Test Results) were a triplicate sample from the VENT area containing alunite.	In addition to the 49 samples submitted for re-analysis (see above section on Static Test Results), a triplicate sample from the VENT area containing alunite also was submitted for analysis.
	2	3	...Water Mobility test.	...Water Mobility Procedure.
3-29	5	10	Broadbent and Associates 1995	Deleted
3-45	1	9	...submitted to the NDEP...	...submitted to BLM and NDEP...
	2	17	...a proposal to the NDEP...	...a proposal to BLM and NDEP...

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
3-86	3	3	Sodium cyanide is...found and reported.	Sodium cyanide can be lethal to wildlife in specific doses, and recent information from studies indicate that bat and bird species may exhibit a delayed influence from cyanide poisoning. These study results suggest that a greater number of individuals may be affected by cyanide exposure than previously thought. Delayed physiological effects, both lethal and sublethal, have been reported for bat and bird species, potentially resulting in increased mortalities or other effects away from areas where direct exposure has occurred. Therefore, mortalities that may result from this exposure would be less likely to be found and reported.
	4	14	According to the NDOW's... the cyanide immediately.	Deleted
3-106	Map 3-23			ROW numbers N59730, NEV 052804, N1932, N59024, and NEV 045607 have been relinquished by their holders and no longer exist within the permit boundary.
3-150	4	11	...are on file at the BLM office...	...are located in the cultural resource files at the BLM office...
	6	9	scatter, was found... (James 1996)...	scatter, and Site CrNV-02-2645 were found... (James 1996; Baldrice 1997).
3-153	Report # CR2-538(P)	8, column 5	2 (1 not eligible, 1 unevaluated)	2 not eligible
	Report # CR2-1035(P)	11, column 4	4 (2 not eligible to the Register, 1 destroyed, 1 unevaluated)	4 (3 not eligible to the Register, 1 destroyed)
		11, column 5	6 (2 not eligible, 1 destroyed, 3 unevaluated)	6 (5 not eligible, 1 destroyed)
3-155	Report # CrNV-22-3344	3, column 3	RI/UE	NEL

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
3-155	Report # CrNV-22-3344	3, column 4	No	Baldrice, June 13, 1997
		8	...APE = 1	...APE = None
3-157	Report # CrNV-02-2645	6, column 3	RI/UE	NEL
		6, column 4	No	Baldrice, June 13, 1997
	Report # CrNV-22-3342	8, column 3	RI/UE	NEL
		8, column 4	No	Baldrice, June 13, 1997
	Report # CrNV-22-3353	9, column 3	RI/UE	NEL
		9, column 4	No	Baldrice, June 13, 1997
3-159		3	...APE = 16	...APE = 13
3-160	P*	9	...by the BLM, however, ...pending.	...by the BLM with concurrence from the SHPO (Baldrice 1997).
	P*	14	...BLM; final...SHPO.	...BLM with concurrence received from the SHPO (Baldrice 1997).
3-161	1	1	In summary, no eligible...concurrence from the SHPO.	In summary, no eligible sites have been recorded within the APE. No unevaluated sites have been identified within the cumulative assessment area. Thirteen...

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
3-164	1 & 2		Direct impacts...for this site is pending.	No NRHP-eligible cultural resource sites have been identified within the proposed project area and no direct effects to eligible sites are anticipated as a result of the Proposed Action. Section 106 consultation with the SHPO concerning the Proposed Action has been completed and the SHPO concurs with the BLM's determination of No Adverse Effect for the subject undertaking (Baldrice 1997).
	3	1	In addition to the unevaluated site identified within the APE there also are 13 NRHP-eligible or...	Thirteen NRHP-eligible or...
		10	...concurrence pending on the determination. Eight...	...concurrence (Baldrice 1997). Eight...
3-165	3		Prior to initiation...of the project (36 CFR 800.3c).	Deleted
3-166	7	22	34	38
	7	24	8	4
3-167	2	1	The Proposed Action is expected to directly impact only one site, CrNV-22-3344, which has been determined ineligible to the NRHP by the BLM, pending SHPO concurrence.	The Proposed Action is not expected to directly impact any NRHP-eligible sites.
5-3	Section 5.2			Add: Auto CAD Specialist; Ana Vargo; M.S. Geology, B.A. Geology, 6 Years Experience
6-1		11	Bibley	Cibley

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
6-1		13		Add: Baldrica, A. 1997. Nevada State Historic Preservation Officer, Nevada Department of Conservation and Natural Resources, Division of Historic Preservation and Archaeology. Correspondence with B. Cribley, Assistant District Manager, BLM-Winnemucca. June 13, 1997.
6-2		13		Add: Broadbent and Associates, Inc. 1997. Hydrogeologic Study and Groundwater Flow Model for Florida Canyon Mining, Inc., Environmental Impact Statement. May 19, 1997.
6-3		27		Add: Harrill, J. R., J. S. Gates, and J. M. Thomas. 1988. Major Groundwater Flow Systems in the Great Basin Region of Nevada, Utah, and Adjacent States: U.S. Geological Survey Hydrologic Investigations Atlas HA-694--C, Scale 1:1,000,000, 1 Sheet.
		29	Hausen, Allon, & Luce, ...	Hansen, Allen, & Luce...
6-6		9		Add: Shepherd Miller, Inc. 1997. <i>Geochemical and Hydrologic Investigation of Waste Rock, Florida Canyon Mine, Winnemucca, Nevada</i> . Prepared for Pegasus Gold Corporation, Florida Canyon Mining, Inc. P.O. Box 330, Imlay, Nevada. April 1997.
6-7		8		Add: Thomas, J. M., J. L. Mason, and J. D. Crabtree. 1986. Groundwater Levels in the Great Basin of Nevada, Utah, and Adjacent States: U.S. Geological Survey Hydrologic Investigations Atlas HA-694--B, Scale 1:1,000,000, 1 Sheet.
		35		Add: U.S. Geological Survey. 1985a. Eugene Mountains, Nevada, 1:100,000 - Scale Metric Topographic Map.

Table 3-1 (Continued)

Page	Paragraph	Line	Is:	Should Be:
6-7		35		_____. 1985b. Lovelock, Nevada, 1:100,000 - Scale Metric Topographic Map. _____. 1987. Star Peak, Nevada, 7.5-Minute Series Topographic Quadrangle.
Appendix A3	Table A3	27	Sample WR-29 (no data)	Deleted

*Partial paragraph at top of left column.

4.0 MITIGATION MEASURES

The following proposed mitigation and monitoring measures have been developed to reduce potentially adverse impacts. These are in addition to the environmental protection procedures outlined in Section 2.2.14 of the Draft EIS.

Soils

Issue: Soil erosion on reclaimed lands.

Measure: FCMi would coordinate with the BLM to develop appropriate vegetation sampling procedures to monitor revegetation success on reclaimed lands. Plant cover and diversity provided by perennial species are the key vegetation parameters that would be evaluated during vegetation sampling.

Effectiveness: Vegetation sampling would identify any reclaimed areas that do not have sufficient perennial plant cover or diversity to control erosion.

Application: This measure would apply to the proposed project and all project alternatives.

Wildlife and Fisheries Resources

Issue: Loss of mule deer winter range from project development.

Measure 1: FCMi would coordinate with both the BLM and the NDOW to develop appropriate mitigation measures for loss of mule deer winter range, habitat fragmentation, and animal displacement. Examples of applicable mitigation could include the placement of additional water guzzlers in and near the project area, off-site habitat enhancement, etc.

Effectiveness: Habitat enhancement for mule deer would help offset the cumulative loss of deer winter range in the foothill region of the Humboldt Range, supporting the resident deer population.

Application: This measure would apply to the proposed project and all project alternatives, except for the No Action Alternative.

Issue: Disturbance of breeding raptors within 0.5 mile of the proposed project development areas.

Measure 2: In the event that project initiation and exploration activities would occur during the nesting season for raptors (March 1 through June 15), a raptor survey would be conducted within appropriate habitat prior to disturbance to determine if any breeding raptors or active nest sites occurred within 0.5 mile of the proposed disturbance areas. Appropriate habitat would include areas supporting trees or large shrubs, cliff faces, rock outcrops, and intermittent drainages. If occupied raptor territories or active nest sites were located, the BLM and NDOW would be contacted. Applicable mitigation measures would be developed with the agencies; these measures would depend on the level of anticipated impacts (e.g., line-of-sight versus topographical shielding) and could include nest avoidance, establishing buffer areas during nesting, moving the nest site, or erecting nest platforms. Any subsequent mitigation measures would be conducted in accordance with the guidelines established by the Migratory Bird Treaty Act.

Effectiveness: Raptor surveys would identify any breeding activity that could be disturbed by mining activities. Additional protection measures, if needed, would minimize the loss of annual productivity for the breeding birds.

Application: This measure would apply to the proposed project and all project alternatives, except for the No Action Alternative.

Issue: Potential raptor electrocution from perching on distribution line structures.

Measure 3: FCMI would design the distribution line structures in accordance with the updated *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 1996*.

Effectiveness: Appropriate line design for the proposed distribution line spur would alleviate potential electrocution to perching raptors.

Application: This measure would apply to the proposed project and all alternatives, except the No Action Alternative.

Issue: Loss of habitat diversity and microhabitat components for long-term wildlife use.

Measure 4: FCMI would stockpile boulders during mine development to be used for rock outcrops during final reclamation activities. These boulders would be taken from materials determined not to be acid generating. FCMI would coordinate with the BLM to determine best placement location and orientation, as part of the final engineering design.

Effectiveness: The placement of boulders to form rock outcrops during mine reclamation would aid in restoring certain microhabitat features for wildlife and plants that are considered keystone species for the natural communities.

Application: This measure would apply to the proposed project and all alternatives, except the No Action Alternative

Special Status Species

Issue: Disturbance to breeding ferruginous hawks within 0.5 mile of the proposed development areas.

Measure 1: This measure would parallel Measure 2 in Section 3.7.4, Potential Mitigation and Monitoring, for general raptor species. If project construction would occur during the raptor nesting season (i.e., March 1 through June 15), a survey would be conducted within appropriate habitats prior to disturbance to determine if any breeding raptors or active nest sites occurred within 0.5 mile of the proposed disturbance areas. Appropriate habitat for ferruginous hawks would include areas with juniper trees, cliff faces, and rock outcrops. If a ferruginous hawk occupied territory or active nest were located, the BLM and NDOW would be contacted, and the appropriate mitigation measures would be developed with the agencies to avoid disturbing breeding birds, as discussed for general raptor species.

Effectiveness: Surveys for breeding ferruginous hawks would identify sensitive nest areas that could be disturbed by mining activities. Additional protection measures, if necessary, would minimize the potential short- and long-term impacts to nesting birds.

Application: This measure would apply to the Proposed Action and the North Extension of the Heap Leach Pad Alternative, except for the No Action Alternative.

Issue: Indirect effects to bat hibernacula, nursery colonies, or other roosting concentrations due to mine development.

Measure 2: FCMI's exploration activities would avoid the potential bat hibernacula and day roosts (i.e., sites 8, 11, and 12 - SWCA 1996d) located within the historic Piedmont Mine Complex during exploration activities. FCMI's mine exploration also would avoid impacting any open water resources located within the Florida Canyon drainage. If these underground workings cannot be avoided, or if exploration drilling occurs within 250 feet of an existing shaft or adit, including associated mine drifts and stopes, FCMI would coordinate with the BLM, the NDOW, and Great Basin bat experts (if necessary) to identify adequate protection measures for potential roosting colonies. Applicable protection measures could encompass: 1) additional bat surveys to determine potential communal roost sites, 2) exclusion of bats from specific workings, and/or 3) habitat enhancement at other shafts or adits (e.g., bat gate installation) in proximity to a communal roost site that would be disturbed by mine exploration activities. The development and implementation of these measures would typically depend on the types of activities planned, the proximity of the disturbance to the shaft or adit, the relative habitat quality and extent of a roost site, and the season of proposed disturbance.

Effectiveness: Minimizing the amount of disturbance to communal bat roosts that would be disturbed from mine exploration activities would prevent adverse impacts to resident bat populations during sensitive periods. Identifying protection measures or habitat enhancement measures would ensure the long-term protection of the roost sites for local bat populations. Coordinating with agency officials regarding bat exclusions, habitat protection, or enhancement measures would prevent significant impacts to bat

concentrations that may be affected by mine development.

Application: This measure would apply to the Proposed Action and the North Extension of the Heap Leach Pad Alternative, except for the No Action Alternative.

Aesthetics (Visual and Noise Resources)

Issue: Outdoor night lighting of facilities at the proposed mine would attract the attention of motorists on I-80.

Measure 1: Outdoor night lighting at the Florida Canyon Mine would be shielded and directed downward where possible.

Effectiveness: Proper shielding and directing of outdoor lights would reduce, but not eliminate, skyward illumination and glare.

Application: This measure would apply only to the Proposed Action and North Extension of the Heap Leach Pad Alternative.

APPENDIX A

**AGENCIES, ORGANIZATIONS, AND INDIVIDUALS
WHO RECEIVED COPIES OF THE DRAFT EIS**

APPENDIX A

DRAFT ENVIRONMENTAL IMPACT STATEMENT REVIEW

Approximately 350 copies of the Draft EIS were distributed by mail to various individuals, organizations, and government agencies. A listing of the agencies, organizations, and individuals who received copies of the Draft EIS in June 1997 is presented below.

Agencies, Organizations, and Individuals Who Received Copies of the Draft Environmental Impact Statement

Government Agencies

HQ-USAF/LEEV - Bolling AFB - Washington, DC
Office of the Deputy A/S of the USAF; Environmental, Safety, Occupational Health - Washington, DC
United States Army Corps of Engineers - San Francisco, CA 94111
United States Department of Energy - Washington, DC
United States Environmental Protection Agency - San Francisco, CA; Washington, DC
USDA, Forest Service - Winnemucca, NV
USDA/NRCS Rangeland Mgmt./Resource Specialist - Winnemucca, NV
USDI/Off. of Environmental Policy & Compliance - Washington, DC
USDI/Natural Resources Library - Washington, DC
USDI/Office of Public Affairs - Washington, DC
USDI/Bureau of Indian Affairs - Elko, NV
USDI/Bureau of Land Management - Reno, NV; Elko, NV; Carson City, NV; Las Vegas, NV; Ely, NV; Battle Mountain, NV; Tonopah, NV; Cedarville, CA; Ridgecrest, CA; Denver, CO; Washington, DC
USDI/Bureau of Land Management, National Applied Resource Science Ctr. - Lakewood, CO
USDI/Fish and Wildlife Service - Washington, DC; Portland, OR; Reno, NV
USDI/USGS - Denver, CO; Carson City, NV; Reston, VA
USDI/Minerals Management Service - Washington, DC
USDI/MMS-RMP - Denver, CO
USDI/National Park Service - Washington, DC
USDI/Office of Surface Mining - Washington, DC

State Agencies

Colorado State University - Fort Collins, CO
State of Nevada Governor's Office - Carson City, NV
State of Nevada Clearinghouse - Carson City, NV
State Planning Coordinator, State of Nevada, Dept. of Administration - Carson City, NV
Nevada Division of Minerals - Carson City, NV
State of Nevada Dept. of Conservation & Natural Resources - Carson City, NV
Nevada Div. of Environmental Protection, Bureau of Mining Regulation and Reclamation - Carson City, NV
Division of State Lands - Carson City, NV
State Engineer, Division of Water Resources - Carson City, NV
Nevada Division of Wildlife - Reno, NV; Fallon, NV; Winnemucca, NV
Historic Preservation Office - Carson City, NV
Nevada Department of Transportation - Winnemucca, NV

Local Agencies

Elko County Library - Elko, NV
Humboldt County Commissioners - Winnemucca, NV
Humboldt County Library - Winnemucca, NV
Humboldt River Water Basin Authority - Carson City, NV
Lander County Commissioners - Battle Mountain, NV 89820
Lander County Library - Battle Mountain, NV
Pershing County Water District - Lovelock, NV
Pershing County Commissioners - Lovelock, NV
Pershing County Library - Lovelock, NV
City of Winnemucca - Winnemucca, NV
Winnemucca City Mgr. - Winnemucca, NV

Elected Officials

Honorable Richard Bryan - Washington, DC
Honorable James Gibbons - Reno, NV
Honorable John Marvel, State Assemblyman - Battle Mountain, NV; Carson City, NV
Honorable Harry Reid - Reno, NV
Honorable Dean Rhoads, State Senator - Carson City, NV
Honorable Paul Vesco, Mayor - Winnemucca, NV

Tribal Organizations

Battle Mountain Band of the Te-Moak Tribe of Western Shoshone - Battle Mountain, NV
Duck Valley Tribal Council - Owyhee, NV
Duckwater Tribal Council - Duckwater, NV
Elko Band of the Te-Moak Tribe of Western Shoshone - Elko, NV
Ft. Hall Shoshone-Bannock - Ft. Hall, ID
Fort McDermitt Tribal Council - McDermitt, NV
Lovelock Paiute Colony - Lovelock, NV
Nevada Indian Environmental Coalition - Reno, NV
South Fork Band of the Te-Moak Tribe of Western Shoshone - Lee, NV
Winnemucca Colony, Western Band of the Western Shoshone - Susanville, CA
Western Shoshone History Preservation Society - Elko, NV
Western Shoshone National Council - Duckwater, NV

Organizations

Animal Protection Institute of America - Sacramento, CA
Audubon Society, Lahontan Chapter - Reno, NV
Center for Urban Affairs and Policy Research - Evanston, IL
Citizen Alert, Native American Program - Reno, NV
Colorado State University - Fort Collins, CO
Desert Research Institute - Reno, NV
Indigenous Affairs International Work Group - Copenhagen DENMARK
Institut fuer Bergbau - Federal Republic of Germany
La Puente Gem and Mineral Club - La Puente, CA

LASER, Inc. - Gridley, CA
McGill University, Department of Geography - Montreal, Quebec CANADA
Mineral Policy Center - Washington, DC
National Wildlife Federation - Portland, OR
National Wildlife Federation - Washington, DC
Nature Conservancy - Reno, NV
Natural Resources Defense Council - Washington, DC
Nevada Cattlemen's Association - Elko, NV
Nevada Mining Association - Reno, NV
Nevada Outdoor Recreation Association - Carson City, NV
Nevada Woolgrower's Association - Elko, NV
Northern Nevada Building Trades Council - Portland, OR
Santa Clara Valley Gem and Mineral Society - San Jose, CA
Sierra Club, Great Basin Group - Reno, NV
Sierra Club, Toiyabe Chapter - Reno, NV
Sierra Club Legal Defense Fund - Denver, CO
Southwest Center for Biological Diversity - Tucson, AZ
Trout Unlimited, Sagebrush Chapter - Reno, NV
University of Nevada - Reno, NV
University of Nevada Libraries - Reno, NV
University of Nevada, Reno, Mackey School of Mines - Reno, NV
Wildlife Society, Nevada Chapter - Elko, NV
Women in Mining - Winnemucca, NV

Industries/Businesses

Agri Beef Company - Boise, ID
American Assay Labs - Sparks, NV
Ballard Spahr Andrews & Ingersoll - Denver, CO
Cordex Exploration Company - Reno, NV
Dames & Moore - Lompac, CA
Echo Bay Minerals Company, McCoy Mine - Battle Mountain, NV
Elko Free Press - Elko, NV
Ellison Ranching Company, Spanish Ranch - Tuscarora, NV
Gatchell Gold, Gatchell Mine - Golconda, NV
Greystone - Englewood, CO
Happy Creek Land and Cattle Company - Elko, NV
Hecla Mining - Coeur d'Alene, ID
Holme, Roberts & Owen - Denver, CO
Hycroft Mine - Winnemucca, NV
Kinross Goldbanks Mining Co. - Winnemucca, NV
Muys & Pensabene, P.C. - Washington, DC
Nevada Gold Mining Inc. - Winnemucca, NV
Newmont Gold Company - Carlin, NV
Newmont Mining Corporation - Denver, CO
PTI Environmental Services - Bellevue, WA
Pacific Southwest Bioservices - National City, CA
Parsons Behle & Latimer - Salt Lake City, UT
Phelps Dodge Corporation - Lincoln, MT
Phelps Dodge Corporation - Phoenix, AZ
Rayrock Mines, Inc. - Valmy, NV

Sage Engineering - Reno, NV
Santa Fe Pacific Gold Corporation - Golconda, NV
Sierra Pacific Power Company - Reno, NV
Steffen Robertson and Kirsten - Reno, NV
WESTEC - Reno, NV
Western States Mineral Corporation - Reno, NV

Individuals

Scott Benson - Laramie, WY
George Brown - Mead, WA
Robert Brown - Manteca, CA
Brian Buck - Sandy, UT
Rocky Chase - Beatty, NV
Carrie Dann - Crescent Valley, NV
Don and Eddyann Filippini - Battle Mountain, NV
Jack Fullenwider - Golconda, NV
Rodney Gettig - Sacramento, CA
Joe Guild - Reno, NV
Corbin Harney - Battle Mountain, NV
Charlotte and Harvey Healy - Wells, NV
Roger Johnson - Winnemucca, NV
Scott Johnson - Sparks, NV
Paul Kersnowski - Lovelock, NV
Jeanne King - Battle Mountain, NV
Susan Lynn - Reno, NV
Florine Maine - Battle Mountain, NV
Douglas Miller - Carson City, NV
Glenn Miller - Reno, NV
Tom Myers - Reno, NV
Tina Nappe - Reno, NV
Mike & Adrienne Parsons - Imlay, NV
Kenneth Paulsen - Arvada, CO
Jeff Petragilia - Manassas, VA
Belinda Quilici - Lovelock, NV
Larry Reynolds - Carson City, NV
Chris Sewall - Crescent Valley, NV
Marjorie Sill - Reno, NV
Gaylyn Spriggs - Valmy, NV
Debra Struhsacker - Reno, NV
Sharon Sweeney - Winnemucca, NV
Edward S. Syrjala - Centerville, MA
Greg Taylor - Battle Mountain, NV
Rachel Thomas - Huachuca City, AZ
Charlene Toomer - Arlington, VA
Edie Wilson - North New Brunswick, NJ

APPENDIX B
TEXT CORRECTIONS

Table 3-6

Summary of Humidity Cell Test Results

Sample #	Rock Type	No. Weeks	Final pH	Final Week Sulfate (mg/l)	ANP (T/kT)	AGP (T/kT)	Percent ANP Consumed	Percent AGP Consumed
WR-47	VENT	20	6.75	8.57	<0.20	55.0	23	0.2
WR-48	VENT	20	7.06	7.52	<0.20	43.8	25	0.2
WR-75	VENT	21	7.18	2.8	<0.20	30.0	100 ¹	0.4
WR-34	VENT	21	7.16	3.26	<0.20	24.7	59	0.4
WR-72	SIL	21	6.39	0.44	1.62	15.0	2.3	0.3
PT-21	VENT	20	5.75	8.97	3.55	14.5	ND	1.1
WR-68	VENT	28	6.14	1.76	14.7	21.6	0.1	0.5
WR-35	VENT	21	7.47	0.57	<0.20	2.19	67	1.2
WR-80	SIL	21	7.24	1	0.35	0.94	51	5.1
WR-76	VENT	21	7.28	1.1	<0.20	0.63	100 ¹	8.0
WR-44	CLAY	20	6.78	5.35	<0.20	0.63	27	7.7
PT-20	CLAY	15	7.29	9.65	0.60	0.78	ND	10.4
WR-81	HEM	21	7.16	0.9	0.60	0.63	35	7.4
WR-82	CLAY	21	7.18	0.7	0.60	0.31	33	8.6

¹ANP consumed before end of humidity cell test.

ND = No Data.

Source: SMI 1997, *Table 6-12*.

